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70TH ANNIVERSARY 1949 - 2019

September 2019

COVER STORY

After decades of false hope and false starts, the mid-engine Corvette is here. Really.

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EST. 1949
VOL. 71 NO. 9

MotorTrend **(ISSN 0027-2094) September 2019, Vol. 71, No. 9.** Published monthly by TEN: Publishing Media, LLC, 275 Madison Avenue, 14th Floor, New York, NY 10016.

Periodicals Postage Paid at New York, NY, and at additional mailing offices. **Subscriptions:** U.S. and U.S. Possessions $18 for 12 issues. Canada $30 per year and international orders $42 per year (including surface mail postage). Payment in advance, U.S. funds only. **Postmaster:** Send all UAA to CFS. (See DMM 707.4.12.5); NON-POSTAL AND MILITARY FACILITIES: send address corrections to: ***MotorTrend***, P.O. Box 420235, Palm Coast, FL 32142-0235.

The mid-engine Corvette wait is finally over: We take a ride in one of the most anticipated new vehicles in decades.

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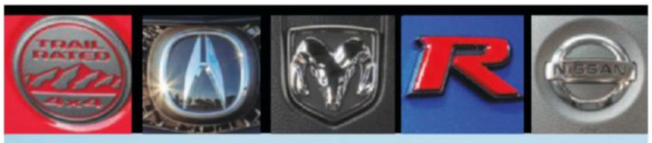


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Artists Paul Laguette

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Finally After 70 years, we reveal our love of Corvette

What do you call a myth that finally comes true? Well, you can call it the cover story of this special 70th anniversary issue. After decades of our theorizing and Chevrolet's teasing, the Corvette quits banging on the limiters of a grand touring platform and upshifts into the realm of mid-engine supercar.

Seventy years of *MotorTrend* means, at minimum, 840 covers, not counting special editions or different versions of issues for newsstands and subscribers. We have a feature this month on the staff's favorite covers over the years, and this exercise led me to count up the number of times we've prominently featured a Corvette on our most prized page, with either an image, headline, or other callout.

The love we've given the Chevrolet Corvette is astonishing and frankly a bit embarrassing; in 70 years, *MotorTrend* has featured Corvette on the cover 177 times, including this one. Put another way, we've devoted greater than 20 percent of our most precious real estate to one single car.

Two issues out of every 10 means longtime readers reliably see a Corvette cover on average twice a year, but the frequency in more recent years has been much greater.

The first issue of *MotorTrend* was September 1949. Corvette made its debut in 1953, but our first cover mention of Corvette was in June 1954, in a photo alongside a Ford Thunderbird. How *MotorTrend* survived those first 58 issues without Corvette remains a mystery to this day, because after its debut, we never looked back. In the '60s and '70s, there were a couple of years here and there with covers sans Corvette, but not by the '80s. The banner year was 1985, the first time that fully half of the year's covers made some mention of Corvette. We never published more than six 'Vette covers in a calendar year, but we managed half a dozen in 1992 and 2005, and we had many years in between when the Bowling Green boulevardier made the cover four or five times.

Our (and apparently your) fascination with Corvettes was both real and imagined. The bulk of our reporting included discussions of style, first driving impressions, and lots of comparison tests. In the early days, Ford T-Birds and high-test Mustangs made up the bulk of our shootouts.

Later on, our focus would shift to Shelby Cobra and the odd foreigner, until the rise of Corvette's archnemesis, the Porsche 911 Turbo. Countless artful pairings and terrible puns positioned Turbo vs. ZR-1. Then the Dodge Viper entered the fray. We spilled gallons of ink on it, as well as Corvette tuners from Hennessey to Lingenfelter, and pulled off top-speed tests and cross-continent road trips. As Corvette (and Porsche) engineers began to push the performance envelope into the supercar space, so did we with comparisons involving Lamborghini, Ferrari, and some newcomer called GT-R.

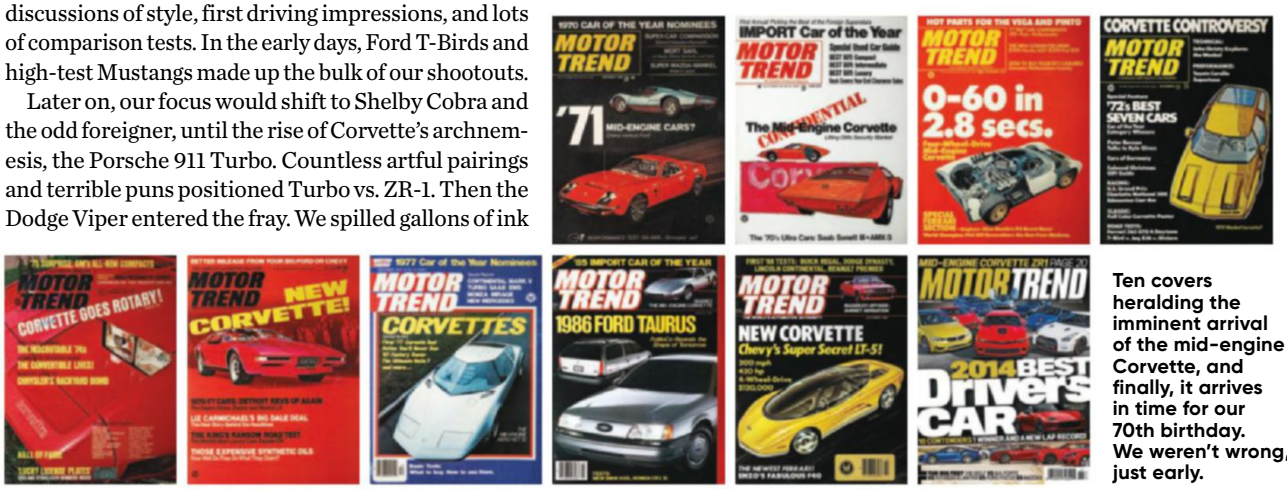
In the imagined space, we devoted pages to what stunning new tech would push Corvette performance past the jet age. Gas turbine engines? Four-rotor Wankels? Hybrid-electric? And then, of course, were the 10 cover stories focused on the imminent arrival of the mid-engine Corvette.

I chuckled to myself while tabbing through the folder of 800-plus covers and jotting down instances of C1–C7. What on earth were my forebears thinking with all of this Corvette lust and mid-engine lunacy, especially in the late '80s through the '90s? Had everyone lost their minds? Then I got to 2014, my third year as editor-in-chief, and discovered that I, too, was guilty: Six issues with Corvette on the cover, including one all-caps skyline blurb atop the Nov 2014 issue: MID-ENGINE CORVETTE PG 20.

Now that the mid-engine Corvette is finally here and we've blown out the candles on our 70th anniversary cake and tipped over the last bottles of champagne, I'm feeling a bit empty. What will we splash across our covers in the decades yet to come?

All-electric, 250-mph, AWD Corvette, anyone? You read it here first.

Editor's Note: At the first planning meeting for this issue, more than a year before we went to press, I opened with the statement, "I hate anniversaries," and then tasked Miguel Cortina, Scott Evans, and Christian Seabaugh to come up with a plan to create retrospective stories you would all want to read and enjoy. Huge thanks to that trio, along with Alisa Priddle and Frank Markus in Detroit, and our entire family of photo, copy, production, and online pros. We went out of our way to revisit the stories MotorTrend *used to tell, and we wrangled vehicles from across seven decades, all to give you a taste of state-of-the-art, way back when. I hope you enjoy the issue.* ■



Ten covers heralding the imminent arrival of the mid-engine Corvette, and finally, it arrives in time for our 70th birthday. We weren't wrong, just early.

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The mid-engine Corvette is here ... and we're in it

FIRST RIDE

2020 CHEVROLET CORVETTE C8

WORDS FRANK MARKUS

"We're none too pleased to have you here."

Soul-crushing words from Corvette chief engineer Tadge Juechter. Chevy's PR department, relenting to *MotorTrend*'s barrage of begging for early C8 Corvette access, has twisted Juechter's arm into letting me ride shotgun for three rotations of a development drive in the latest C8 prototypes.

His team is loath to expose the press to anything less than a fully baked, buffed, and polished, production-ready, no-excuses Corvette—and this drive is a crucial step in that process. Upon solemnly swearing not to report on any quality lapses I may detect, I strap into the right seat of a 2020 Chevrolet Corvette Stingray Z51 with FE4 suspension.

"Cars are complicated," Juechter deadpans, noting that writing, developing, and perfecting the software that controls the myriad microchips, solenoids, motors, features, and functions on a modern car takes vastly longer than any other aspect of bringing a car to market.

The process starts at vehicle inception, and final calibration tweaks are made right up to and sometimes past launch. On today's drive, Juechter's team is scrutinizing powertrain calibrations—especially concerning launch feel and the ability of the clutches in the Tremec eight-speed twin-clutch transmission to mask the 6.2-liter V-8's transitions into and out of four-cylinder mode at various cruising speeds.

Developing a suitable transaxle has been a limiting factor to the concept of a mid-engine Corvette since the 1960s, when transaxles from the front-drive Oldsmobile Toronado and rear-drive Pontiac Tempest proved inadequate. My ride, precisely six weeks in advance of the press launch, reveals a pretty impressive state of tune.

Shifts in automatic mode sound and feel incredibly swift and smooth, and I'm unable to detect any four-cylinder mode vibrations. Juechter notes that the very first prototype transaxles performed almost perfectly at 70 percent or greater throttle. The challenge has been tuning for every other condition. Later on, vehicle performance manager Alex MacDonald will call my attention to an abrupt transmission engagement issue he's tagged for follow-up. I hadn't noticed it. These cars are nearly ready for prime time.

But back to this FE4 Z51 with magnetorheological dampers. We are traversing scabrous pavement and railroad crossings in Tour mode, and the ride quality delivered by the car's run-flat 35-series 19-inch front and 30-series 20-inch rear tires is impressively plush. Juechter then dials up Sport

The squircle steering wheel and "unique" ergonomic features like the push-button shifter and long line of buttons at right are going to take some getting used to.

We are promised that roughly 10 cubic feet of luggage fit behind the engine and above the muffler that goes where a useful rear diffuser would be. Note the Shelby-like spoiler/wing S'wing.

and Track modes, each of which noticeably ratchet up the road feel.

I am pleased to hear that the car will "remember" either Tour or Sport mode after cycling the ignition, which required EPA certification to be done in both modes with results being averaged for CAFE and window-sticker reporting.

We ride along, discussing the many challenges presented by transitioning the Corvette from front-mid to mid-rear engine positioning. (There were no in-house experts to consult, no similar GM cars to build mules from, and lots of unknown unknowns.)

I'm struck by how conversational the cockpit is. The engine note is textbook small-block background music, which comes to the foreground when an exhaust valve in the muffler opens in Sport or Track mode. Most of what I'm hearing is organic, but the active noise-cancellation system does a bit of frequency augmentation—primarily of exhaust sound, because the pipes are muffled by a luggage area and the engine. They're also positioned way behind our ears, and sound pressure drops with the square of distance.

Getting the chassis balance right with a 40/60 weight balance was another big challenge. Mid-rear-engine cars have a natural tendency toward midcorner understeer, but tuning the springs and bars to neutralize that part of the corner can mess up the car's entry and exit behavior. So the team optimized the electronic limited-slip differential tuning to make the car more neutral midcorner while tuning the bars and springs for entry and exit. (That multiplate-clutch type e-LSD works like the old one, except it's now powered by the transaxle pump.)

During my stint with lead development engineer Mike Petrucci in an FE3 Z51 Stingray, our route affords a few

Three challenges the mid-engine presented

Everything about building a mid-engine car was new to the C8 development engineers. There's virtually nobody left from the earlier mid-engine Corvette programs (or even the Pontiac Fiero team) to consult with, so the C8 team pretty much had to benchmark state-of-the-art competitors. And because most competitors have been developing mid-engine sports cars for several generations, the pressure on the Corvette squad has been high to nail the benchmarks right from the start. Plenty of computer-aided engineering and rough mule prototype vehicles were involved. Below are a few of the diciest challenges the team faced.

Engine Note Tuning Some of the nastiest (in a bad way) sounds an engine makes are now 12 inches from the driver's ear: the accessory drive. Hence the firewall is well insulated, and the bulkhead window is 9mm thick (most windshields are 5mm thick).

Everyone loves exhaust noise, but that's really far away, and the pipes are short, presenting no opportunity for X-pipes and other plumbing elements to improve the sound. Even the intake is located pretty far back, but airflow is directed through some body cavities with openings near the driver door in an effort to naturally direct some of that noise forward.

The car's audio system is primarily programmed to cancel objectionable frequencies, but a bit of constructive enhancement of the trademark small-block burble is also dialed in. The Z51's low-restriction exhaust valve makes the car as loud as it legally can be. A mid-motor NVH windfall: Road noise is inherently reduced by moving the big rear tires aft and insulating them behind an engine.

Matching Corvette's Legendary Trunk Space Few sports cars can touch the Corvette hatchback's 15-cubic-foot luggage capacity. The ability for the C8 to continue the legacy as a weekend getaway car was deemed crucial. So despite an engine sitting where all that luggage used to go, the team has roughly matched that space, with a 5-cubic-foot "frunk" and room for 10 more cubes in the back.

The front accommodates a standard airline-regulation roll-aboard laid on its narrow, tall side. The rear can fit two golf bags. And although a new four-piece set of fitted semi-rigid leather duffels will be offered for the C8, the C7's five-piece set fits in the C8. The removable targa roof panel also fits in the back (though not necessarily along with the golf bags or fitted luggage).

Torsional Stiffness/Crash Energy Management The long-hood short-deck front-mid-engine layout was a breeze for energy management. There used to be plenty of room to gently steer crash energy down around the front wheel to the side frame member. Swap the powertrain and cabin positions, and the tire is right behind the dead pedal, leaving no room for a crash energy load path. Those forces must now be directed into the center tunnel structure.

The comparatively narrow box the engine used to fit in is smaller and more inherently rigid than the larger opening required to accommodate the C8's entire powertrain. But the team reports that the torsional stiffness is better than that of the C7 and several key competitors. There are also several local stiffness wins, one of which is the steering column. Because it's shorter and more direct, it was easier to stiffen it up. **FM**

The new Corvette Z51's low-restriction exhaust valve makes the car as loud as it legally can be.

opportunities for hard acceleration out of some corners, which the new chassis dispatches without a hint of wheelspin. I'm pinned to the seat with no oversteer. Clearly it's going to take a lot more concentration to drift this generation of Stingray than it has most previous gens. (Future Z06s and ZR1s might be a different story.)

This car's ride feels enough stiffer than the MR car's Sport setting that if I were buying a car for Michigan roads, I'd prioritize the FE4 suspension over any other options when speccing out a Z51.

Petrucci takes me through the Stingray Z51's aerodynamic upgrades, which include a subtle chin spoiler balanced by

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CLARIOS

Those vents flanking the engine window provide for convection cooling. This engine/luggage cover is the largest composite structure GM has ever made.

Four Tech Triumphs: Industry-trumping firsts and fun features

Flagships always get the coolest tech first, and the Corvette C8 is most definitely Chevrolet's flagship and a standard-bearer for the entire General Motors Corporation. Here are four technologies that piqued the interest of your humble *MotorTrend* technical director.

Cylinder Deactivation + Twin-Clutch: Neither is a new technology, but GM is the first to combine them in this market and this segment. This is a big deal because the vibration that comes with shutting off half the cylinders is harder to absorb or mask without a torque converter in the driveline.

Torque converters are basically fluid couplings, and fluid is great at absorbing vibes. And even when they're locked for fuel savings, their housings can incorporate nifty pendulum mass dampers tuned to absorb torsional wiggles.

All a multiplate clutch pack can do in a twin-clutch system is loosen its grip enough to allow a few 10s of rpm slippage, so that's what happens during the transition between modes. The team still wasn't quite satisfied with the quality of these transitions as of our development drive ride-along, though I couldn't detect four-cylinder operation from the passenger seat.

GPS Nose Lift: The C8 Corvette's front suspension includes screw jacks that can raise the car by 2 inches to help the chin spoiler clear aggressive speed bumps, driveway approaches, and the like. The fresh thinking Chevy brings to this staple of mid-engine wedge-mobiles is the option to geotag and store each such obstacle in a memory bank, so you need not fuss with manually lifting the nose for every bump, dip, or apron on your daily commute.

The car can even start jacking itself up early if you're approaching a bump with a bit of speed. Heck, with a memory for 1,000 such places, you can program in every permanent bump or hump you encounter.

Programmable Turn Circle: With no powertrain in the way and no drive to the front axle dictating constant-velocity-joint angles, it's possible to really crank the front wheels of the C8 Corvette when maneuvering in tight quarters—but only at low speeds and when neither front wheel is articulating over some bump. The electric power steering, informed by myriad speed and wheel-position sensors, imposes "virtual stops" that limit steering angle based on speed and conditions. At its most extreme limits, the Corvette's turn circle is just 36.0 feet curb to curb, down from the C7's 37.7 feet. This is especially impressive given that the C8's wheelbase is a half-inch longer (at 107.2 inches).

Sequential-Decay Turn Signals: Our killjoy government just doesn't want us to have fun things like sequential turn signals. There's a minimum amount of light that must be displayed when the signal first illuminates. The first of three elements in a Mustang taillamp are big enough, but cars that attempt to successively illuminate LEDs in the direction of a turn can't meet the standard, so they typically flash a full-size element at the same time (see Audi). The Corvette's LEDs flash on fully, and then switch off successively from the inside out, indicating the direction of the turn. A clever workaround. **FM**

The Corvette C8 is Chevy's flagship and a standard-bearer for General Motors.

a hybrid spoiler/wing in back that works like the one that's about to make its debut on the Ford Mustang Shelby GT500. A duckbill spoiler in the center generates big downforce from the air coming down off the rear hatch window, and the outer wing sections develop some additional downforce while allowing most of the air coming around the cockpit to flow under with reduced drag.

The body sculpting also optimizes cooling airflow through the side-mounted radiators; a smooth underbelly pan further reduces drag. The rear diffuser generates little or no downforce because the muffler lives right where a venturi tunnel would need to be in order to generate downforce. Petrucci claims that at speed the Z51's aero package produces measurable downforce, not just reduced lift.

Asked what mid-engine competitors his team benchmarked, Petrucci mentions the usual suspects—Porsche 718 Cayman, Ferrari 458 and 488, McLaren 570S, and

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At long last, a transaxle worthy of a mid-engine 'Vette.

Fast 4-1-1: Mid-engine 'Vette basics

Prepare to be bombarded with facts, trivia, and minutiae covering every aspect of the long-awaited mid-engine Corvette in the weeks leading up to its on-sale date. For now, here's a concise distillation of the most basic information you need to get the conversation going at your local cars 'n' caffeine gathering.

Engine: The base Stingray's 6.2-liter V-8 engine is the least interesting part of the new C8, yet it has been significantly revised in morphing from LT1 to LT2 nomenclature.

Myriad little refinements contribute to the roughly 45-hp jump in output to what is still an estimated 500. A big one is the camshaft. Another biggie: All variants now get dry-sump lubrication, featuring three suction pumps and a more compact remote reservoir. The system is said to be capable of providing full-pressure lubrication under sustained lateral cornering loads of greater than 1 g.

The cylinder deactivation system is still of the Active Fuel Management V-8-4 style, not the Dynamic Skip Fire system that deactivates any cylinder at will on GM trucks.

As yet there is no confirmation of the pressurized DOHC engine options that have been predicted for higher-powered future variants.

Transmission: Everyone predicted the C8 would get a Tremec TR-9070 seven-speed dual-clutch, but it will get a completely bespoke eight-speed twin-clutch developed in conjunction with Tremec.

No three-pedal manual or torque-converter transmission is planned. Full details of this M1L transmission haven't been disclosed, but we know the top three gear ratios are overdrive, and first gear is primarily for launch. It is capable of shifting directly between any two gears as necessary. The transmission is tuned to provide a creep mode when lifting off the brake from a stop.

Suspension: Three suspension options will again be offered on the Stingray: the base FE1, FE3, and FE4 for Z51 models (the latter with magnetorheological damping). These fourth-gen MR shocks offer greater bandwidth and react much faster.

In order to take full advantage of this quickness, wheel-position accelerometers are located on the knuckles where there's little or no lost motion; as such, they're four times faster than previous setups at reporting wheel motion.

FE1 tuning is slightly more aggressive than the base C7 Stingray setup. It's close to the FE4 Tour setting, though spring rates are higher on the Z51. FE3 tuning is sportier than the FE4 Sport setting—close to the factory Z mode setting.

Brakes: Brembo brakes use six-piston front and four-piston rear calipers and eliminate the drum-in-hat parking brake in favor of lighter secondary rear calipers. Base JL9 front brake rotors are similar in size to today's (12.6-inch) rotors, while the rears are slightly larger. The Z51's J55 brake setup gets larger rotors all around. Carbon-ceramic brakes are not offered on the Stingray.

A big braking challenge that was not related to the amidships powertrain placement: regulation to remove copper from the brake pads, which had accounted for 20 percent of the material.

Wheels and Tires: All Stingrays will ride on Michelin run-flat tires sized 245/35ZR19 front and 305/30ZR20 rear. They'll be wrapped around spun-cast aluminum wheels that are strengthened to cope with America's worsening roads. Base cars get Pilot Sport All Seasons; Z51s get Pilot Sport 4S tires that we're told function quite well in the wet. Winter tire fitments will be available. Pilot Sport Cup tires are available now in these sizes, but the development team cautions track rats that the extensive chassis-control electronics are optimized for the stock tires, so caveat emptor.

Launch Control: There's no special button, and none is really needed because the mid-engine Corvette is an inherently strong launcher. All you have to do is engage Track mode, turn traction control off, step on the brake, floor the accelerator, and lift off the brake. And an improved Performance Data Recorder will now record all such launch and lap data (and presumably Russian dash-cam-style wreck footage) automatically and continuously. It saves the video and time/speed/distance info to a 128-GB card that writes over itself after 1,000 minutes. **FM**

The FE1 suspension tuning is slightly more aggressive than the base C7 Stingray setup.

Ford GT—but he notes that owners of these cars don't typically expect them to be as everyday-usable as a Corvette. His baby therefore needs to be easier to get into and out of, less punishing, and capable of hauling luggage. I'm promised that the 15 cubic feet of luggage that fit under the C7's hatch—one regulation roll-aboard suitcase and two modest golf bags—will fit in the C8, split between front and rear trunks.

All too soon my sessions are over, and I'm left watching the three camoed Corvettes roar back toward their home base at GM's Milford Proving Ground, my appetite well and truly whetted for my first chance at the left seat. ■

We Say...

Mark Rechtin
REFERENCE MARK @markrechtin

Confronting Our Past: We choose the Ultimate Car of the Year

How could you? Better yet, how *dare* you?

Our Ultimate Car of the Year test (page 32) will likely dredge up memories of some rather, *ahem*, controversial choices that this magazine has made in annually naming the best sled on four wheels.

The letters that *MT* editors have received over the years regarding our Car of the Year decisions contain enough paper to repopulate a small forest. Most boil down to some version of the following: "Choosing the Pontiac 6000 SUX over the Nissonda Camcord clearly means your editors spent too many fireside nights imbibing brown liquids rather than actually, you know, *driving* the cars."

So imagine the challenge to go back through our 70 years of existence, pick a representative vehicle from each decade, and line them up to pick the Ultimate Car of the Year. Yeah, some brown liquid may have been involved. But plenty of sober thinking, as well.

Remember, Car of the Year represents the best of what new or redesigned vehicles were released that year ... including the Chevy Vega.

Let's focus on the methodology. In nearly three decades of evaluating vehicles, I've been on several equivalent "Best Car" juries, and no one has a more thorough, empirical, blast-proof process than *MotorTrend*. Our current six key criteria cover value, efficiency, engineering excellence, safety, advancement in design, and performance of intended function. And although the approach has evolved somewhat through our history, it's always been some variation of that theme.

Still, that won't silence those who call out cars like the Chevrolet Vega as alleged evidence of our ineptitude in judging vehicular talent. But remember, this was 1971. And as technical director Frank Markus says, "The Vega in its day was compelling, with great design and loads of engineering advancements. It just turned into a turd later."

Have there been some odd decisions? Of course! If you always make the popular choice, there's nothing for readers to argue about later. Not that we're deliberately trying to troll the public; to our methodology, that year's winner was simply better than what conventional wisdom would suggest. To wit: the 1972 Citroën SM over the Porsche 911S, the 1995 Chrysler Cirrus over the Oldsmobile Aurora. More recently, the 2011 Chevrolet Volt over minivans from Honda and Toyota drew lots of hate mail, and the 2018 Alfa Romeo Giulia over the Honda Accord attracted more than a few confused-dog gifs on Twitter.

I've gone through our archives and read the articles. As an editor, I'm quick to notice any finagling or pandering verbiage, but there's no tiptoeing through the minefield here—just like today, my predecessors charged through testing with their size-12 racing sneakers pinned to each car's firewall.

The likes of Dan Gurney, Peter Brock, and Del Coates were on the panel that voted the Chevrolet Monte Carlo our 1973 COTY over the Ferrari Dino, Audi 100 LS, Mercedes 450 SLC, and Jeep Wagoneer. Yes, that's right. A freaking Monte Carlo beat a Ferrari. But if you told ol' Dan to his face that he didn't know cars, you'd be a candidate for some rhinoplasty, stat.

I also reached out to former editor-in-chief C. Van Tune, and he gave me this historical recounting: "It's easy to take potshots at some of the past winners, but it's important to remember that we tested what the companies built. That field of cars was as good as it got in any particular year."

With such heritage of awards before us, we rolled out our eight candidates for the Ultimate COTY. Of course, you can't compare a 1950s Chevy Bel Air to a 2013 Tesla Model S. You have to define it against its era. Was that Citroën as much of a technological lightning bolt as the Pontiac GTO, Mazda RX-7, or Toyota Prius when they hit dealerships? Turn to page 32 to find out.

And as always, we await your letters. ■

We Say...

Frank Markus
TECHNOLOGUE

Highlight Reel: 37 Years of Technologue

By my count, this is *MotorTrend*'s 263rd Technologue column, stretching back to May 1982. For the first two years, the page answered readers' techie car questions. Then Ron Grable, Rick Titus, John Hanson, B.J. Hoffman, and Don Fuller took turns mostly explaining new technologies hitting the market.

Between January 1988 and September 1995, Technologue downshifted from monthly to occasionally. During the pre-Markus era, 23 future-tech concepts were explored, my favorites of which were the crazy Waller opposed-piston swashplate engine of September 1986 and the Acro-Tech "Vented Valve" concept of August 1994. Since November 2004 I've mostly used the page to explore how engineers, chemists, physicists, and scientists of all stripes are working to make our motoring world a better place. For this anniversary issue, I've spent a month working up this virtual highlights reel.

In all, we've covered 183 future technologies—77 percent of all Technologue topics. Of the concepts highlighted, 36 percent have been developed to the point of production, after an average of 4.4 years. Extensive Googling suggests another 20 percent—including most of the recent topics—still have active research ongoing.

Topics-wise, I've covered 27 alternate-fuels technologies, 20 battery/EV/HEV concepts, 16 advanced combustion engine ideas, 15 electronics/infotainment topics, and 14 columns each covering chassis and safety.

Another 37 of my favorite columns defy such easy classification—like the HondaJet, the odor-fighting seat upholstery made of shrimp shells, the thorium-powered car, Ford's braille window film that helps blind passengers enjoy scenery, and the Toyota/JAXA lunar rover.

Two of my favorite columns that have yet to bear fruit (as far as I can tell) are 2008's "Dyno On Board," in which 16-year-old Taylor Blackwood dreamed up (and prototyped) a way to outfit a car's driveshaft universal joint so it can report the torque it's transmitting in real time. The U.S. patent office granted Blackwood US7603918B2 in 2009, but I find no evidence of production.

My other favorite was July 2009's "Catom & Eve," introducing the concept of "pario"—an "actual reality" 3-D Claymation-like evolution of today's virtual augmented reality. Carnegie Mellon U is still working on downsizing the microbot "pixels."

Favorite column titles through the years include "NuVinci Code—At last, a tranny with some balls" (about an orbis and globus CVT concept that is now in production for bicycles), "Road Hard (if not put down wet)—Rethinking concrete science" (about new longer-lasting, low-CO_2, ash-based Portland cement replacements that hit production in 2017), and "Noblesse Oblique—Privileged with federal government resources, NHTSA upgrades NCAP" (about the 15-degree oblique sled crash test and other revisions arriving soon).

Various methods of turning trash, ag waste, old-car shredder residue, algae, or fast-growing grasses into biofuels have inspired seven columns and one political screed imploring our government to institute a floor on the price of oil to foster development of promising technologies. (Oh, the hate mail that one drew!)

I've also given a lot of ink to the idea of running a cheap gas engine on more efficient compression ignition. I was so pleased to write "GTHO! Mazda gets the H out of HCCI" in December 2017, when this nut finally appeared to be cracked by the Skyactiv-X engine, only to learn this year that EPA/CARB is proving difficult.

I've covered autonomy only six times. That's because the topic is no fun. Yes, it's coming at us like the inevitable root canal or hip replacement; yes, it should save lives and enable nonstop in-transit mobile-device fiddling for all. I still hate it, so don't hold your breath for tons more coverage on that topic.

Thanks for reading, and feel free to pitch me future column fodder @MT_Markus. ■


technologue

DUBS DONE RIGHT

FRANK MARKUS TECHNICAL DIRECTOR

I decided to humor the nice GM PR type who invited me to a seminar about big wheels and tires at the General's Milford Proving Ground. It was only a half-day, it was nearby, and GM's caterer bakes fab cookies. So even though I'd learned all I wanted to know about big wheels from Kim Reynolds's definitive piece in our May issue, I went along.

In the hope of siphoning off a bit of the lucre currently gushing into the coffers of 100 aftermarket wheel manufacturers at the rate of about $3.2 billion annually, GM has launched 10 different 20x8.5-inch wheels tailored to its line of full-size trucks. We were brought in to learn what that "tailoring" involves.

The first part of the briefing recapped our story, as the engineers elaborated the many deleterious effects that super-sizing one's rolling stock can have on a vehicle's ride, handling, acceleration, braking, fuel economy, chassis durability, and safety. I daydreamed a bit, teetering as I was on the brink of a cardiocoma, but tuned in to vehicle dynamics manager Frank Severna's comment that "it's possible, with ultralarge wheels, to fit a tire that's incapable of supporting the mass of the vehicle itself." Yikes! The essence of the lecture boiled down to this: wheels by those 100 "other guys" • • • bad—GM wheels • • • good.

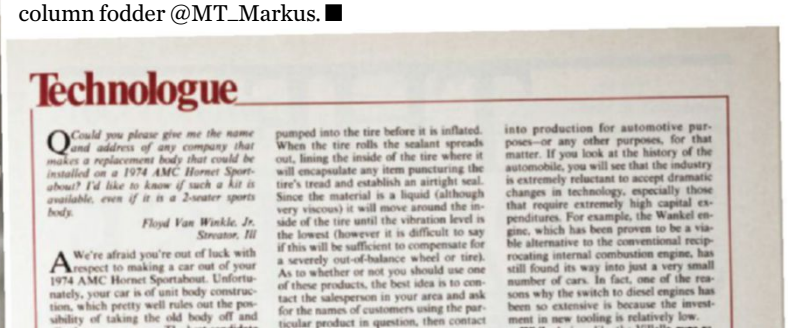
To drive this message home, we were then herded into shuttles to sample the ride and handling differences between similar Chevy Silverado pickups rolling on standard 18-inch wheels and 265/70R18 General tires, the new GM Dubs shod with 275/55R20 Goodyear Eagle LS tires ($275?-$399?, depending on truck model and wheel finish), and off-brand 20s on Falken Zex S/T 20Is in the same size (priced at $270?).

The level of noise and ride-quality degradation between the stock tire and the upsized GM-spec tire was remarkably small. This is because for any given vehicle, GM assigns a Tire Performance Criteria (TPC) number connoting a matrix of specifications for tread compound, sidewall construction, rolling resistance, and myriad other parameters. The 20s and 16s for the Silverado share TPC numbers, so despite inherent differences in construction, the performance is quite similar. Not surprisingly, the Brand-X combo rode flinder, sizzled and sang louder, vibrated a bit more, and felt somewhat darker at the steering wheel. Sadly, a biblical rainstorm prevented us from comparing their handling merits.

Seeking shelter, we then toured GM's tire-torture chambers. Here 80-plus engineers and technicians subject 15,000 new tire-and-wheel combos per year to simulated curb hits, overloaded over-temperature operation, excessive vibration, and other tests to ensure compliance with all internal and international wheel standards, including Japan's JWL rating and the new SAE J2530 spec. Rigorous road testing further ensures that GM wheels preserve full vehicle warranty coverage.

Our tour guides on this portion of the program finally won me over on the wisdom of buying from Mr. Goodwrench—or Mopar, or Ford Racing Performance Parts (which claim to perform similarly rigorous testing on factory-street-legal aftermarket parts). For starters, the price of the wheels and tires includes the hardware and software needed to keep your speedometer correct and a new placard showing the recommended inflation pressures to maintain proper handling for the truck. Savvy Brand-X buyers might be able to get along without these, but Wheels-B-Us can't tell you the new progressive-rate jounce bumpers that some models need to cope with the added unsprung weight or the revised knee-blocker brackets others need for full factory crash protection.

That's right, not only can the wrong wheels compromise braking enough to cause a wreck, but if the hit is hard enough, they could also help crush your feet and collapse your tensors. Of course, then you could get 30s for your wheelchair...


Technologue

Could you please give me the name and address of any company that makes a replacement body that could be installed on a 1974 AMC Hornet Sportabout? I'd like to know if such a kit is available, even if it is a 2-seater sports body.

Floyd Van Winkle, Jr.
Streator, Ill

We're afraid you're out of luck with respect to making a car out of your 1974 AMC Hornet Sportabout. Unfortunately, your car is of unit body construction, which pretty well rules out the possibility of taking the old body off and pumped into the tire before it is inflated. When the tire rolls the sealant spreads out, lining the inside of the tire where it will encapsulate any item puncturing the tire's tread and establish an airtight seal. Since the material is a liquid (although very viscous) it will move around the inside of the tire until the vibration level is the lowest (however it is difficult to say if this will be sufficient to compensate for a severely out-of-balance wheel or tire). As to whether or not you should use one of these products, the best idea is to contact the salesperson in your area and ask for the names of customers using the particular product in question, then contact

into production for automotive purposes—or any other purposes, for that matter. If you look at the history of the automobile, you will see that the industry is extremely reluctant to accept dramatic changes in technology, especially those that require extremely high capital expenditures. For example, the Wankel engine, which has been proven to be a viable alternative to the conventional reciprocating internal combustion engine, has still found its way into just a very small number of cars. In fact, one of the reasons why the switch to diesel engines has been so extensive is because the investment in new tooling is relatively low.

Technologue's humble debut back in 1982 (below) and Frank's first Technologue that kicked off in 2004 (left).

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They Say...

Tesla head of design Franz von Holzhausen (left), Elon Musk, and the original Model S concept can be seen in an exclusive video on MotorTrend.com.

Elon Musk

Co-founder and CEO, Tesla Motors

Although anniversary issues tend to dwell on the past, we wanted to also look into the future. Our interview subject is the man history might deem most responsible for changing the course of the traditional internal combustion vehicle. The following are excerpts from a video interview, edited for length and clarity, of Tesla Motors co-founder and CEO Elon Musk, at Tesla's design studio in Hawthorne, California. For the full-length interview, head to MotorTrend.com.

When you look at the first Model S concept, what does it bring back?
Heartache. We gave our heart to this car, for sure. Everything just all in.

Is there any particular feature your team sweated over? Door handles, for sure. The nose, every curve, every crease, angle, we went over every tiny piece all the time. And it's a hard thing to make a sedan look good. To make a sports car look good is relatively easy. It's sort of like a runway model. The proportions are set up to look good. But sedan proportions are not set up to look good.

The original Model S came out in 2012, for the 2013 model year. Since then, how come nobody has surpassed Tesla in terms of range and performance?
Well, I don't know. It's surprising to us. Once we started delivering them to customers and they were approved by the regulators and met all of the safety requirements, I really expected that within maybe three years or something, we'd have something that was better than the original Model S. But I guess the car industry is just fairly slow to evolve. It didn't take electric vehicles really seriously until 2015, maybe 2014. A lot of the senior execs at the other car companies still didn't believe it, and we're like, "Well you could just drive it and see if it's real."

"THE FUTURE WILL BE ALL ELECTRIC, ALL AUTONOMOUS. I DON'T MEAN SOME ELECTRIC, SOME AUTONOMOUS. I MEAN ALL ELECTRIC, ALL AUTONOMOUS."

Why continue to upgrade and update the Model S with new Easter eggs and video games? The overall goal is, how do you make a car as fun as possible? We only have a couple of engineers on this. It's not like a massive investment. But if you're waiting for somebody while they're shopping or you're charging up, you can play a video game. The overarching goal is, what can we do to make you fall in love with this car? The biggest thing about Tesla and the cars that we make is that this is not designed by a soulless corporation. There's not some finance spreadsheet or something like that with some market analysis—there's none of that. Obviously, we need to bring in more money than we spend, but at the end of the day we want to make a car that we love, that hits us in the heart, that makes you feel. And how many of these cars—they have no soul. They make all these cars that have no soul or no heart, and they wonder why nobody feels anything for them. Why should they?

That's a bold statement because a lot of people feel like EVs are soulless. Prior to Tesla, you owned a McLaren F1, which was the supercar of the day. It was. Now the Model 3 performance can beat it. I think the McLaren F1 was an incredible design, and for a gasoline car, it's amazing. It's a piece of art, for sure. But when you go to electric, it's just a fundamentally superior technology. You've got physics on your side. You've got Isaac Newton as your copilot—he's helpful. The McLaren F1 is 50 percent slower 0–60 than the Performance Model S [P100D]. And it's a four-door sedan that can seat up to seven. You could probably put seven people and full luggage and still beat a McLaren F1.

What's next? We've got to scale up our production to make millions of cars per year. I think in general, from a societal-benefits standpoint, we need to improve the cost of an electric powertrain to make the car more affordable. And we need autonomy. The next two massive disruptions for cars are electrification and autonomy, and they are happening at the same time, very basically. The future will be all electric, all autonomous. I don't mean some electric, some autonomous, I mean all electric, all autonomous. Whether you like it or not, this is what's going to happen. **Ed Loh**

PHOTOGRAPHS WILLIAM WALKER

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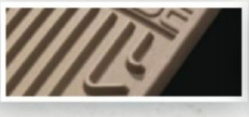

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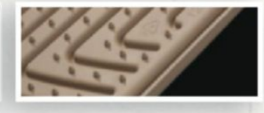

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MOTORTREND'S MOST SIGNIFICANT CAR OF THE YEAR

WORDS SCOTT EVANS, CHRISTIAN SEABAUGH
PHOTOGRAPHS WILLIAM WALKER

MotorTrend's original editors could never have imagined what the Car of the Year award would become. At first, it almost seemed like an afterthought.

Buried in our third issue, the award was envisioned as a way to recognize the most advanced automobile of 1949. All models were considered, and of the three finalists—Cadillac, Ford, and Oldsmobile—it was the Cadillac that would make history as our first winner for its powerful and efficient new overhead valve V-8.

Since its humble beginnings, Car of the Year has evolved from an award given to an entire automaker to one given to a specific car that most lives up to our six modern-era criteria: Advancement in Design, Efficiency, Engineering Excellence, Performance of Intended Function, Safety, and Value. As new types of vehicles have been developed and have arrived on the scene, our editors have created SUV and Truck of the Year awards, as well—and our competitors have ginned up plenty of copycats, too, both at home and abroad (should have trademarked the award, darn it).

Ninety-two cars have won Car of the Year or Import Car of the Year since our founding. Some have been great, and others—well, others were products of

THE ULTIMATE COTY COMPETITION: EIGHT PAST WINNERS FACE OFF

their time. As we look over our list of Car of the Year winners, we can't deny that most have had a significant impact on both what we drive and how we drive.

But surely one has to have had more of an impact than the 91 others.

In honor of our 70th anniversary, we wanted to figure out which Car of the Year or Import Car of the Year was the most significant. Over a few weeks, we whittled down our 92 contenders to just eight—one winner for each decade *MotorTrend* has been in existence.

Our trophy started out as a homely looking thing, but the Golden Calipers played an early part in our designs.

Our picks: the 1949 Cadillac lineup, the 1955 Chevrolet lineup, the 1968 Pontiac GTO, the 1972 Citroën SM, the 1986 Mazda RX-7, the 1996 Dodge Caravan, the 2004 Toyota Prius, and the 2013 Tesla Model S.

Over a whirlwind day of testing and evaluating, we would drive each of our eight finalists and seek to find which of these greats is the most significant Car of the Year. Our winner will not only best live up to the ideals of our award but also be the car that has had the biggest impact on the industry. **CS**

Finalist: 1940s
1949 Cadillac Series 62 Sedanette

We didn't waste any time. We were three issues old, but we were already naming our first Car of the Year and establishing an award that would change the industry. As would often be the case into the mid-1960s, the award was given not to a specific model but to an entire brand lineup, in this case Cadillac Division.

Whether it was founder and publisher Robert E. Petersen, co-publisher Robert R. Lindsay, founding editor Walter A. Woron, or someone else on staff who first proposed a Car of the Year award is lost to history. The task of selecting a winner and defending it to our readers was delegated to future *Road & Track* owner and publisher John R. Bond, who at the time was a contributor to the other magazine as well as a design engineer for Frank Kurtis, whose Kurtis Sport Car was featured on the cover of our first issue.

Being an engineer, Bond focused his selection almost entirely on mechanics, and he got straight to the point.

Ford had been struggling to shift back toward civilian automotive production following World War II, and although its new models employed significant mechanical updates that helped save the company from bankruptcy, those changes didn't rise to Bond's level of expected engineering improvements, instead relying on prewar ideas.

The Cadillac lineup, by contrast, introduced a new V-8 that Bond felt truly moved the industry forward. He extolled the virtues of the new overhead valve engine while excoriating other manufacturers for sticking with a flathead design, complete with charts and technical drawings. To Bond's eye, the gains in fuel efficiency, weight savings, power output, and durability in Cadillac's new 331-cubic-inch (5.4-liter) pushrod V-8 far outweighed anything Ford or Oldsmobile had done. Weighing nearly 200 pounds less and making 10 more hp than the flathead it replaced, it was the most powerful engine on the market, with 160 hp (sans accessories, which brought it down to 133 hp "as installed").

Today we consider advancement in design a key part of Car of the Year, but Bond went the opposite way, praising Cadillac for *not* making any major styling changes for 1949. Tailfins and front fenders flush with the body had been introduced in 1948, a major update, but only experts can spot the visual differences between a '48 and a '49. Bond, apparently sick of GM design boss Harley Earl's predilection for face-lifting a car every year, was thrilled the '49 Cadillac was otherwise nearly identical to the '48.

Curiously, Bond never remarked on the smoothness or quietness of the engine, which is impressive even today. Every time we touched this '49 Series 62 Sedanette, owned by Randall Wixen, we stopped and strained our ears to check whether it was already running then made sure it was in neutral before starting it. (The four-speed Hydra-Matic automatic didn't have a parking gear but rather engaged a parking pawl in reverse with the engine off.) The driving experience can only be described as stately, the engine quietly humming along, making just enough power to move the car at a relaxed pace. Some automatics today don't shift as smoothly, and the unassisted brakes inspire refreshing confidence compared with early power brakes, which operated like light switches. The steering is slow by any standard, needing 90 degrees of rotation to begin a turn and another 90 to complete it.

With the Cadillac easily retaining its crown as the self-proclaimed "Standard of the World" and ushering in a new era of more powerful overhead valve engines, it's no wonder Bond picked it. Ford's car may have saved the company, but it didn't change the automotive world the way Cadillac did. **SE**

THE PATH TO GREATNESS IS UNPAVED WITH MILESTONES

Jeep® Wrangler and Motor Trend Magazine have been blazing memorable trails and reaching new heights for decades. This year, both have notable achievements to celebrate.

HAPPY 70TH ANNIVERSARY MOTOR TREND!

Jeep

Finalist: 1950s
1955 Chevrolet Bel Air America: Reborn, rebuilt, restyled

It's weird to think of *MotorTrend* as a startup, but back in the early days, we needed to figure things out as we went. No one had published a magazine devoted to the American new-car enthusiast and shopper until we came along.

Throughout the 1950s, we jumped around with how we named our Car of the Year. We did everything from naming a specific vehicle to simply awarding individual vehicles for superlative performance, with the automaker with the most wins unofficially earning the title. Some years, we skipped it altogether.

We had six COTY winners in the '50s, but none was more impactful than Chevrolet's game-changing 1955 lineup including the 150, the 210, and the Bel Air. It sported a new chassis and modern suspension (which helped it earn "Best Handling" and "Most Roadable"), and it was available with a 265-cubic-inch (4.3-liter) V-8 and a Powerglide two-speed automatic capable of zipping from 0 to 60 mph in a quick 12.3 seconds.

And then there's the styling. No vehicle from the 1950s is more iconic than the Tri-Five—that's 1955, 1956, and 1957—Chevrolets. These block-shaped cars featured fins, wraparound windshields, and a bold color palette that'd make even Lady Gaga blush. Available in seven body styles, including the Nomad shooting brake (one of our top automotive designs for the year), the 1955 Chevy lineup brought Cadillac style and performance to the masses, ultimately helping Chevrolet lock down 44 percent of the "low-priced" market the first two years of its existence.

The Tri-Five Chevys are just as stunning in 2019 as they were in the height of the Atomic Age. Our tester, loaned to us by Tomas Vazquez, is a beautiful India Ivory and Pinecrest Green 1956 Chevrolet Bel Air. Powered by a 162-hp 265 V-8 paired with a two-speed auto, it's virtually identical to the '55 model that helped Chevrolet earn its glory, save for a revised grille and tailfins.

Seeing a Chevy Bel Air in like-new condition in the 21st century is trippy, to say the least; it's somehow anachronistic yet futuristic at the same time. The Bel Air is beautifully styled, and despite the two-tone paint job, chrome trim, hood ornaments, fins, and more, it's still somehow understated in its design. There's no excess in this piece of rolling American exceptionalism. It's a true masterpiece of automotive styling, a testament to what automotive designers can do when allowed to put design ahead of all else. Which, coincidentally, is something I'm keenly aware of when I look down at the dangerously pointed metal ornament set in the middle of the bus-sized steering wheel, right where an airbag would be in a modern car, or glance across at the pale turquoise steel dash.

Dipping into the throttle and looking at the sun-swept California hillside rolling out before me frees me of thoughts of impending death. The Bel Air's engine isn't feeling well today—a likely vacuum issue limiting the car to about 15 mph (or 110 mph if the speedo is to be believed)—but it doesn't matter. It sounds powerful and rides remarkably for its age. It even handles decently, especially when compared with the '49 Cadillac also on hand.

After spending some time driving and admiring the Bel Air, it's not hard to see how it won our hearts. The '55 Chevy defined its generation—just as much then as it does today. **CS**

Finalist: 1960s
1968 Pontiac GTO
The first supercar

Long before the term applied to angular mid-engine European metal, the term "supercar" was coined to describe the original 1964 Pontiac GTO. The first GTO was essentially a 325-hp V-8 squeezed between the fenders of a Pontiac LeMans. The world-beating performance it offered inspired a generation.

Although the original GTO will always be credited with creating the muscle car genre, no car defines the muscle car era better than the 1968 Pontiac GTO, our 1968 Car of the Year.

In retrospect, it's easy to look back at the '68 GTO's win as our editors being swayed by "supercar" performance over all else, but the truth is that the 1968 GTO's virtues run much deeper than that.

"The finest commentary on the fallacies of modern technology has now been presented to the American automotive world by the 1968 GTO—a car that incorporates not only the best taste in GM's 'A'-body variations—and an excellent handling and performing supercar package—but also the most significant achievement in materials technology in contemporary automotive engineering," we wrote in our February 1968 issue.

The GTO was an engineering marvel for its time. Ignoring its certainly underrated 350-hp 400-cubic-inch (6.6-liter) V-8 for a moment, we dedicated more than half of our essay to the "Endura" front bumper. Basically a piece of hard, painted foam resistant to impacts up to 4 mph, the bumper was so durable that we depicted a staffer swinging a hammer at the GTO and featured photos of the car running into a bollard, looking no worse for wear. The Endura bumper allowed Pontiac to revolutionize design, we said, by opening up new possibilities for front bumper shapes and colors not previously possible.

We were of course impressed by the performance, too. "Like the fabled tiger connected with GTO, it paws around corners flat and true, then leaps through short straights, ready to have another go at a seemingly hard turn," we wrote. The Pontiac could obviously hustle in a straight line, too. Our four-speed automatic tester ran from 0 to 60 mph in 7.3 seconds; our Hurst four-speed manual tester, equipped with a Ram-Air intake, could do it in 6.5.

Our Verdoro Green 1968 GTO, graciously loaned to us by the Original Parts Group of Seal Beach, California, feels every bit as healthy today as it did 51 years ago. That Pontiac was able to coax 350 hp out of this V-8 in the '60s is impressive, especially considering muscle cars didn't begin to crest 350 hp again until the early 2010s.

Freed of modern emissions equipment, the 400 breathes freely and deeply, and it still launches the GTO with the ferocity of a current muscle car. Dipping into the throttle and letting the V-8 trumpet produces the same sort of giggles a Tesla Model S P100D does when launched—it's pure, silly, pointless fun.

If only the drum brakes, and steering were up to the task. The former are woefully inadequate for a car with 35 hp, let alone 350, and the latter is fingertip light with little in the way of feedback. How all you baby boomers survived the late '60s and early '70s driving these wild beasts is beyond me.

"We've owned several other new cars that wore thin after their newness wore off," we concluded in our homage to the Pontiac. "That wasn't the case here. Even when we'd clocked thousands of miles, the GTO still appealed to us as a 'new' car, with the thought of it becoming 'old' a nearly impossible happening." Five decades later, I'm happy to report that those words still ring true. **CS**

Finalist: 1970s
1972 Citroën SM
First foreign COTY

There's no brake pedal. Just a big, black button on the floor between the gas and the clutch. The pictograms on the buttons, switches, and warning lights make no sense. The seats are either reclined or really reclined. The Citroën SM seems like a UFO, making you wonder what our experts made of it in 1972. Except we do know: They made it the first foreign-branded Car of the Year.

It was an illustrious panel, to be sure. Created in 1971 to bring industry expertise to our judging, the Conference of Automotive Research Specialists (CARS) included racer Phil Hill, racer and automotive safety engineer Bill Milliken, automotive engineer/designer/reporter/author Karl Ludvigsen, automotive designer and Art Center design professor Strother McMinn, and *MotorTrend* EIC Eric Dahlquist.

That the SM was heavily based on the existing DS' mechanicals was outweighed by the advancement of the technology. A technical dive involving rare access to Citroën officials described enhancements to the car's hydropneumatic systems, a rework of the DS' unique control-arm front suspension, an automatic brake-force proportioning system, and a hydraulically powered steering centering mechanism to compensate for the race car–quick steering ratio at high speeds.

Also receiving good-natured scrutiny: the car's wind tunnel–tested aerodynamics and its new Maserati V-6 with 170 net hp nosed up to the firewall with the five-speed transaxle ahead of the engine driving the front wheels. As American automakers were limping into the malaise era, the Citroën was a technological tour de force. Or at the least it tried to be.

Nearly a half century later, Bill Lundby's personal 1973 SM is as strange to drive as it sounds. The steering is lightning quick, so you're often correcting yourself after turning harder than you'd intended. Once you have that figured out, you have to learn to be deliberate as you return the wheel to center. Most cars return to center slowly; the SM's steering wheel snaps back quickly enough to have you flopping around the cabin.

The brake button is pressure sensitive but has almost no travel, seemingly taking your input and figuring the rest out for itself. The dynamic brake proportioning means the car never dives under braking or squats under acceleration but simply settles or lifts gently.

This body control only applies to longitudinal behavior. Turn a corner and glance out the window, and you might catch a glimpse of the door handle dragging on the ground. The car has a front anti-roll bar, but it's apparently cosmetic. The motions are controlled and predictable, and the car returns to upright just as nicely. There's just more motion than needs be.

The highlight, though, is a ride quality that would make Rolls-Royce envious. (Indeed, Rolls licensed the technology in 1965 for the Silver Shadow.) Potholes, speed bumps, cracks, seams, even cattle guards simply cease to exist under the wheels of an SM. They're heard but never felt, not in the chassis and not in the steering. The multiposition ride height is just a bonus.

That tech would also doom the SM. Citroën did not get the exemption it expected from 5-mph bumper regulations in the U.S., its largest export market, in 1974. That and the need for separate Citroën and Maserati specialists to service the car turned off customers worldwide. The SM was dead by 1975. Only 12,920 were built.

That the car was a moonshot didn't concern our judges. Rather, it invigorated them."The cars we evaluated as Car of the Year from [1952] on were looked to as promising directions for the automobile evolution," we wrote. "Viewed in the perspective of the last twenty-one years, the SM fits more precisely in the spirit of the Car of the Year, maybe better than anything else being made in the world today." **SE**

Finalist: 1980s
1986 Mazda RX-7
Import winner defines fun to drive

Prior to the recent advent of Radwood car shows, the 1980s got a bum rap as far as automotive decades go. With the malaise era refusing to release its grip, a lot of mediocrity was on display in the first half of the decade.

Nonetheless, we found the decade to offer a number of significant winners that represent the era well. 1986 was a banner year for the award, with the revolutionary Ford Taurus named Car of the Year, but we thought we should turn your attention instead to the Import Car of the Year winner, the second-generation Mazda RX-7.

The first Import Car of the Year was awarded to the 1970 Porsche 914, but the award was then put on hiatus until 1976. Company lore has it the open-minded inclusion of imports in Car of the Year was quickly quashed after the Citroën SM beat several American cars in 1972, leading to the eventual reintroduction of a separate Import Car of the Year award as it became clear imports were here to stay. (The two awards were merged in 2000 to level the playing field.)

The RX-7 is especially notable, as it's the only combustion-powered, piston-less car to win a *MotorTrend* award with its turbocharged rotary engine. (The fourth-gen car would win again in 1993.) More than that, it was, like the Citroën SM, a technological marvel. An all-new independent rear suspension featured a passive rear-steer geometry that would change from toe-out to toe-in as speeds rose to increase agility. We called it "surely the smartest collection of 'dumb' linkages, levers, and bushings this side of the space shuttle."

Also on the build sheet: computer-controlled active dampers, computer-controlled variable power steering, and, of course, a turbocharged engine that prompted one judge to write: "The RX-7 leaves like a AA fueler [drag racing car], the quintessential hot-rod."

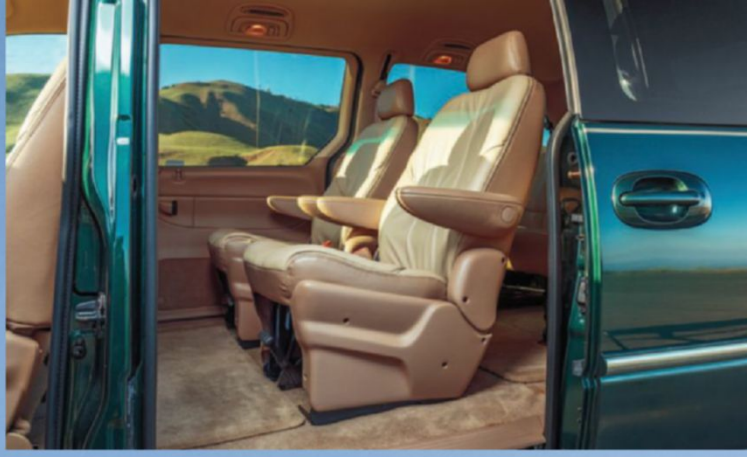
This 10th Anniversary edition 1988 RX-7 Turbo from Mazda's private collection is a revelation to drive today, and it completely explains the breathless tone we took in announcing its win. The car feels so light that you consider getting out and lifting the bumper just to see if you could get two wheels off the ground. The steering is pinpoint precise and feels just as good today as it did when we lauded it in '86. The body control is phenomenal, the whole car moving exactly the way you predict in every corner.

With the Corvette the only American car worth mentioning in a handling discussion back then, this car must've been a bolt from the blue for our editors. More than a few modern sports coupes could learn from the handling and response of this car.

Today, we'd probably complain about turbo lag as the snail spools up and the acceleration curve takes an exponential path up the rev range. Judged by '80s standards, though, we called it "the model of smooth, responsive, usable power." Having the Saab 9000 Turbo in the same test no doubt helped the Mazda's case.

It wasn't an easy win, though. The RX-7 won six out of eight objective and subjective categories, but in almost every case it just barely beat out the Audi 5000CS Quattro. It took big hits in fuel economy (the rotary engine's ultimate undoing), braking (because it lacked ABS), and design (judges said it looked like a Porsche 944 knockoff).

But all that went out the window with a turn of the wheel. So enjoyable was it to drive that it prompted one editor to admit, under guarantee of anonymity, "This damn thing is a lot faster than I am." **SE**



Finalist: 1990s

1996 Dodge Caravan
The minivan that defined a generation

The 1996 Dodge Caravan was—and remains—the only minivan to win Car of the Year. It's also near and dear to my heart; a Forest Green Pearl Coat 1999 Grand Caravan was my family's first car.

Personal biases aside, there simply is no *MotorTrend* Car or Import Car of the Year winner from the decade more worthy of inclusion in this best-of-the-best Car of the Year than the 1996 Caravan.

The third-generation Caravan and the identical low-spec Plymouth Voyager and high-spec Chrysler Town & Country revolutionized the minivan. The Caravan and its ilk ditched the boring, boxy styling of the original Chrysler minivans and the ensuing copycats in favor of a sleek cab-forward design that not only looked like nothing else on the road but also helped maximize interior space.

The 1996 Caravan didn't just set the design standard for the minivan. It set the features standard, too: dual sliding doors, second-row captain's chairs, and seats that fold forward, allowing owners to load in 4x8 sheets of plywood—the list goes on and on.

We were particularly enthralled with how the Caravan drove. Unlike the minivans that came before it—which we described as "low-enjoyment travel appliances"—the new-era Chrysler triplets were all remarkably carlike in how they drove. Engine power, coming from a 150-hp 2.4-liter I-4, a 150-hp 3.0-liter V-6, a 158-hp 3.3-liter V-6 (available in CARB states), and a 166-hp 3.8-liter V-6, was plentiful for the day. Its dynamic qualities lived up to the carlike nature Chrysler had promised.

The bandwidth of the minivan line was also impressive. There were eight trim levels for the Caravan, plus a roomy Grand Caravan model. Buyers who couldn't afford the Caravan's $16,575 starting price (just under $27,000 in 2019 dollars) could opt for the cheaper Plymouth versions, and those who wanted a more premium experience could move up to Chrysler.

Although our award officially recognized the better-selling Caravan, we noted that the Voyager and Town & Country were equally worthy of praise.

For our test, it wasn't easy finding a 23-year-old minivan that hadn't been beaten, spilled in, and scrawled upon over multiple generations of family use. After striking out in our quest for a Caravan, Fiat Chrysler Automobiles came through—shipping us the world's cleanest 1996 Chrysler Town & Country LXi from Detroit.

Finished in the same forest green as my family's old Dodge, it's not hard to see why the Town & Country and its stablemates wowed us back in 1996. Even today, it still feels remarkably contemporary, with nearly all the features a modern minivan buyer would expect, like storage cubbies throughout the cabin and plenty of space. Only its lack of USB ports and infotainment screens betray this van's age.

The Chrysler still delivers on the carlike driving dynamics, too. It drives about as well as a domestic sedan from the era, with the big V-6's 227 lb-ft of torque and four-speed auto helping get the Town & Country going at a decent pace. The van's ride is as floaty as I remember it from when I was a kid; sitting in the roomy third row and getting carsick as I stare at screens—then Pokémon on a Game Boy, now Microsoft Word on a laptop—brings back many memories, good and bad.

Many exceptional minivans have come and gone since the 1996 Dodge Caravan won Car of the Year, but none has had the impact of the third-generation Chrysler van. Sure, power doors, Apple CarPlay, and vacuums are nice, but this COTY established the blueprint for the modern minivan to follow. **CS**

Finalist: 2000s

2004 Toyota Prius
It's easy being green

"We love horsepower, naturally. And responsive handling—the more g's, the more grins here at *MotorTrend* HQ. Sexy sheetmetal? Always gets our attention. We've never denied our affinity for luxury amenities, either.

"Above all, though, we are admirers of brilliant design and engineering. Which is to say, design and engineering that advance the state of the automotive art without forcing users to relearn what they already know about the automobile."

So we opened our argument for our 2004 Car of the Year, the second-generation Toyota Prius. We knew even then it would become the symbol of eco-friendly car buying and that our readership wouldn't be the target audience.

"How could *MotorTrend*—the bible of tire-smoking performance—hail a 110-horsepower econocar?" some would write. "You've caved in to the tree-huggers," others cried.

But we were as right about the Prius as we were in predicting it would preview "a future where extreme fuel efficiency, ultra-low emissions, and stirring performance will happily coexist in one package." Witness: Porsche 918 Spyder, McLaren P1, Ferrari LaFerrari, and Tesla Model S.

Making such a controversial call weighed on the staff. Mixed opinions on the design, power, and handling made it into the story, the win as much a surprise to the staff as it was to our readers. After all, this car beat out the Mitsubishi Lancer Evolution VIII, the face-lifted second-gen Subaru Impreza WRX STI, the controversially styled fifth-gen BMW 5 Series, the reintroduced Pontiac GTO, the Mazda RX-8, the all-new Scion brand with its xA and xB, the luxurious Audi A8L, and its cost-no-object cousin, the Volkswagen Phaeton.

But we recognized what the Prius portended. Hybrids to date, we pointed out, were the niche first-gen Honda Insight and the forgettable first-gen Prius. The new car, though, represented a sea change. The groundbreaking hybrid drivetrain technology—the patents would later be licensed by major competitors—offered an eye-bulging 48/45 mpg city/highway, nearly as good as the teeny Insight and handily beating the Honda Civic Hybrid and even the (pre-Dieselgate) Volkswagen diesels.

More than just a triumph of engineering, the Prius was the complete package. It was spacious, comfortable, and a "competent" performer loaded with impressive features for the day—including optional front curtain airbags, a voice-activated DVD-based nav system, and Bluetooth. What's more, it did it all for just $25,939 ($35,600 today) fully loaded.

Fresh out of Toyota's private museum, this 2004 Prius just feels familiar. You've seen it everywhere, a million times. Even if no one in your family ever owned one, you've ridden in one. You knew someone who had one, or your taxi/Uber/Lyft has been a Prius. A cultural touchstone, the Prius became the official "it" car of green Hollywood—driven to the Academy Awards and beyond by Cameron Diaz, Leonardo DiCaprio, Tom Hanks, and the rest of the A-list. That this funky hatchback became a mainstream vehicle sold in the millions is all the more astonishing.

It's easy to see why, though. Everything the Prius did, it did while being "as easy to use as a TV," we wrote. The same way Apple changed the world with an iPhone that "just worked," the Prius brought reliable future technology to the masses with just a bit of styling quirkiness so everyone would know what you were driving. Sliding behind the wheel today, only its low-res screens give it away as a 15-year-old car. It rides well, it's comfortable, there's tons of room, the powertrain is smoother than some new cars, and it handles like a minivan.

"The penalties for such environmental consciousness?" we asked. "We haven't found any: That's the magic of the new Prius." **SE**

Finalist: 2010s
2013 Tesla Model S
Redefining modern transportation

The 2010s aren't quite over yet, but when we sat down to pick which Car of the Year winner from this decade is most impactful, we quickly, unanimously agreed upon the 2013 Tesla Model S.

Simply put, no car—let alone truck or sport utility vehicle—from the 2010s has had or will have both the cultural and vehicular impact of the big Tesla sedan. The Model S turned the automotive industry on end when it made its 2013 debut.

A rolling manifesto, the Model S announced to the world that Tesla was more than a kit-car maker of electrified Lotus Elises. Serial production of ground-up electric vehicles meant Elon Musk's enterprise was to be taken seriously.

Initially available with two battery sizes promising up to 265 miles of range and a rear-mounted AC-induction electric motor good for up to 416 hp, the Model S made the average American rethink what an EV is and what it could do. The Tesla was both shockingly quick, accelerating from 0 to 60 mph in 4.0 seconds, and efficient, netting an observed 74.5 mpg-e during Car of the Year testing. As an added bonus, with a center of gravity about as low as a 2005 Ford GT, the big Tesla could dance around a corner, too.

The Tesla Model S also made American luxury cool again. Outside, the Model S was beautifully proportioned and elegant in its stance, while inside its massive 17.0-inch dash-mounted tablet made the world realize luxury didn't just mean leather and wood trim. Luxury is technology, too.

Holding it all together was Tesla's burgeoning Supercharger network. Just six of these fast-charging stations existed in California back in 2013, but we could see the promise of long-distance EV travel even then. Today, Tesla has built more than 1,500 of its proprietary Supercharger stations worldwide, covering virtually every mile of the continental U.S., and copycat networks such as Electrify America are growing rapidly.

These stations have made long-distance transportation in an electric car a viable option, and have shown established automakers the path forward to the inevitable electric future.

The crazy thing about driving a Model S is how normal it all is. Our 2015 Tesla Model S 85D tester, owned by MotorTrend Group head of legal Diana Malhis, is fast and sporty, yet it's also comfortable and quiet. So many qualities that were previously polar opposites coexist happily in the Model S.

Even more amazing is how much this particular Model S has evolved over the years. Thanks to Tesla's continual over-the-air improvements to the Model S, this car is capable of driving semi-autonomously across the country should the mood strike. Because of the future-proofing updates delivered straight to your driveway, it'll take far longer for a Tesla to become outdated than it will other electric or gas-powered cars.

Saying the Tesla Model S is a game-changer is cliché, but no vehicle can do what the Model S can do as well as it does it. This is the vehicle that almost singlehandedly made electric cars cool.

More telling: Even six years after the Model S went into production and won Car of the Year, there's still not a single electric car from another automaker that can go as far as the Tesla Model S (now up to 370 miles on the latest software), go as quick as the Model S (down to a shocking 2.3-second 0–60 on the P100D Ludicrous+), or challenge the Tesla's sense of California cool.

As it did in 2013, the Tesla Model S feels like the future. **CS**

The all-new 2019 Subaru Forester® is an ideal traveling companion for trips long and short. The spacious new interior lets everyone stretch out, and the wider cargo opening with available Power Rear Gate makes it easy to bring the fun. And the Forester puts safety first, with standard EyeSight® Driver Assist Technology.*

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The Ultimate Car of the Year: 2013 Tesla Model S

The selection and judging criteria have changed, the trophies have changed, and the vehicles most certainly have changed, but the spirit behind the Car of the Year is the same today as it was in 1949: Identify the most superlative new vehicle introduced each year.

We are confident that, were we to summon all the judges and staff of the past 70 years, we would come to a rapid consensus: No vehicle we've awarded, be it Car of the Year, Import Car of the Year, SUV of the Year, or Truck of the Year, can equal the impact, performance, and engineering excellence that is our Ultimate Car of the Year winner, the 2013 Tesla Model S.

"The mere fact the Tesla Model S exists at all is a testament to innovation and entrepreneurship, the very qualities that once made the American automobile industry the largest, richest, and most powerful in the world," we wrote. "That the 11 judges unanimously voted the first vehicle designed from the wheels up by a fledgling automaker the 2013 *MotorTrend* Car of the Year should be cause for celebration. America can still make things."

It can be argued, as we still are today, that the Tesla Model S wouldn't exist without the Prius. If Toyota hadn't made green cool, the nascent Tesla Motors—founded one year before the second-generation Prius was named our 2004 Car of the Year—might never have sold an electrified Lotus, much less create a new car that would revolutionize an industry.

Elon Musk's Model S kept all the promises.

There's a difference, though, between setting the stage and dominating it. The Prius changed the world in 2004, but it has struggled to maintain its cultural relevance in successive generations. Other automakers are scrambling to match Tesla's technology, but Tesla still carries the first-mover advantage, and it continues to advance its leadership.

The audacity of Tesla still impresses. Prior to Elon Musk's leap of faith, the road to creating the first truly independent American mass-production automaker in the postwar era had only been littered with the wreckage of visionaries and hucksters, from Kaiser to Tucker, DeLorean to Bricklin.

Only Tesla has survived, and it has thrived. (Hedge-fund short-sellers may be excused their doubts.) Today, we take for granted the number of startup electric vehicle companies coming out of the woodwork. But before the success of the Model S, it was virtually unheard of, defiant powertrain technology be damned.

Across the decades, automakers and their dealers have taken risks on cars that were pure vaporware. But none has seen hundreds of thousands of customers beat down their virtual door to throw money at a car that didn't exist yet from a company that had never turned a profit or delivered a product on time—and not just once, but for three of the four products it's made and two more it hasn't yet. Tesla perfected what Tucker pioneered.

Let's not lose sight of the car for its legacy, either. With the Model S, Tesla rethought many of the basic relationships between driver and vehicle. Seven years later, there still isn't another car that doesn't require a start button or key. The idea that a car would recognize your phone as you approached, unlock, boot up its computers, and be ready to operate and drive the moment

Tesla changed how we think about electric cars.

Seven years after the Model S' win, no one has put a bigger screen in a production car.

you sat down and closed the door is still cutting-edge today.

The notion of replacing a vehicle's nearly every physical control with a digital one then updating the underlying software with patches and imaginative new features—all while you sleep and free of charge—is still just being emulated now.

And still, the better part of a decade later, there isn't an electric car that can travel as far as a Model S, nor is there a street-legal production car of any motivation that can beat a Ludicrous Model S to 60 mph.

Meanwhile, Tesla remains among the front-runners of advanced driver assistance technology; Autopilot and Autosteer were both unveiled on the Model S.

The Model S changed the

way the world thinks not only about electric cars but also about cars in general. Divorce the car from the controversies and polarized opinions of the company and its mercurial CEO, and it remains clear there isn't another vehicle created during our 70 years of existence that has had a truly comparable effect on automobiles, the automotive industry, and society at large.

Every car here was selected because it's the best representative of the decade when it won, and still the Model S stands apart. In our 70 years of identifying a Car of the Year, none is more deserving than the 2013 Tesla Model S.

Will Tesla Motors still exist 70 years from now? Perhaps. But Musk's true vision was to electrify the world via an incontrovertibly earth-shattering product, not to create an automaking monolith. In seeing how Tesla's rivals are rushing to imitate its technology—sincerely, not with lip service—it is clear his vision is close to being fulfilled. **SE**

EIGHT INSTRUMENTS are grouped at the steering wheel in a Stewart-Warner panel, while the remainder of the dashboard is smooth. A standard floor gearshift is used.

TOM MEDLEY

TRUNK SPACE in the Kurtis Sport Car is ample for carrying spare tire and luggage.

The original article boasted of the car's Stewart-Warner instrument panel and ample trunk space.

WORDS KIM REYNOLDS
PHOTOGRAPHS WILLIAM WALKER

The First First Test

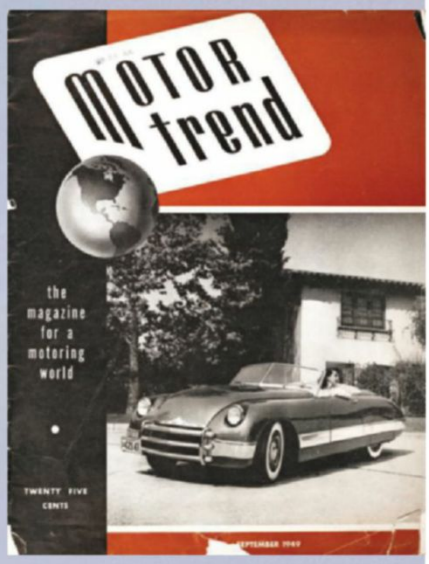
It's not every day that a company buys a valuable heirloom, an actual piece of its history. But as *MotorTrend* lights 70 candles on its birthday cake, it's this car—this obscure frog-green 1949 Kurtis we recently purchased—that's being wheeled up as our present to ourselves.

Why the Kurtis? The easy answer is that it's the automobile on the magazine's first grainy, three-color cover. Not just any Kurtis. The exact car.

Another reason is that 70 years is time enough for everybody present at *MT*'s birth to have now packed their desks and relocated to that great printing press in the sky, most notably our founder, Robert Petersen, who started the magazine on Hollywood Boulevard and moved it to a black-glass tower on Sunset Boulevard and then to a monumental bronze one on Wilshire Boulevard. We finally caravaned here, near the beach, to a remodeled El Segundo tilt-up that was originally used for engineering the Apollo space program in the 1960s.

We've been Los Angeles vagabonds, then, with no single home as a touchstone. An Ancestry DNA query would more likely pop up a picture of this green roadster rather than any particular address. The Kurtis Sport Car is our earliest fingerprint.

According to Ken Gross (virtuoso car historian, "Pete" Petersen's longtime pal, and frequent *MT* contributor), L.A. race car builder Frank Kurtis was even a coauthor of this magazine's origin story. Although Petersen's *Hot Rod* magazine (founded in 1948) found quick success, it wasn't attracting the big-buck ads from major car companies. Kurtis—already working on his car—was a booster of a second magazine oriented around production cars.



IT'S NEVER TOO LATE TO PUT THE ORIGINAL *MOTORTREND* COVER CAR THROUGH INSTRUMENTED EVALUATION

When the inaugural *MotorTrend* appeared the following September, it was naturally Frank's "Sport Car" (his first production example) on its cover. The photograph was snapped by Petersen, with a company secretary behind the wheel.

During the next seven decades—as *MT*'s covers have been dutifully following motoring's trends, from Mustangs in '64 to Tesla Model 3s—the Kurtis was on its own odyssey. The car was fitted with a cut-down windscreen and dispatched to Bonneville, where its race-prepped flathead Ford V-8 pushed it to 142.5 mph in the hands of drag racing's George Washington, Wally Parks. (It was also driven by iconic car journalist Dean Batchelor, whom I knew later in his life.)

Refitted with a more livable flathead Ford, Frank drove it all over the place to drum up orders for subsequent sales (his Kurtis-Kraft business in nearby Glendale, California, already a legendary race car shop, was soon to post five Indy 500 wins in the 1950s). After Kurtis sold the car, it got a Cadillac V-8 transplant, was crashed in 1960, bought, sold, its history garbled, a restoration started and abandoned. Another resto attempt by DeWayne Ashmead of Salt Lake City stuck, resulting in what you see here.

As for the production run of the Kurtis Sport Car, after 18 examples, the car's rights were sold to L.A. entrepreneur Earl "Madman" Muntz, who stretched it into a four-seater and peddled it as the Muntz Jet.

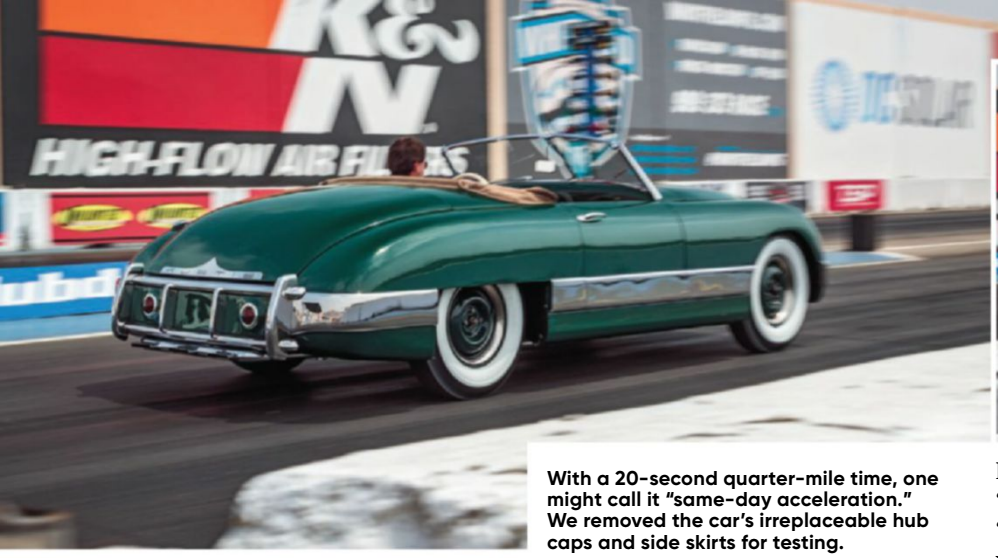
When our newly acquired Kurtis rolls on casters into the middle of the

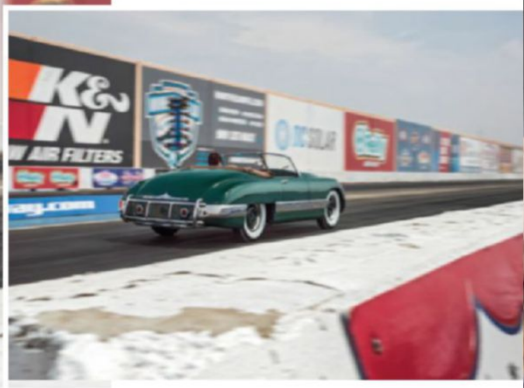
MotorTrend cubicle field for display, it sits like the Hope Diamond gleaming at the Smithsonian. People walking past give it a wide, cautionary berth. Should we curtsy before leaning close to view its aircraftlike gauge cluster?

Soft-surfaced and handsomely proportioned, 90 percent of the car's visual character probably comes from its considerable horizontal brightwork. Stand 2 feet away, and you can check if your shoes are tied by their reflection in the 6.5-inch-tall streamline chrome belt that ribbons its flanks and licks around the front and back like a Tupperware seam. Light from the overhead fluorescents pools on those liquidy green surfaces and highlights a few cellulite ripples along its fiberglass expanses, too. A worrisome sign of age.

Nonetheless, I raise my hand: Can we test it? My pitch was that our 1949 founders dropped the ball and must have forgotten to get test numbers back then (not mentioning that the National Hot Rod Association, dragstrips, and our testing program didn't even exist). It's our responsibility to fix this historical gaffe, I implored.

Left: Author and *MT* testing director Kim Reynolds cautiously probes the limits of the 70-year-old Kurtis Sport Car on our figure-eight course. Right: International bureau chief Angus MacKenzie welcomes the priceless Kurtis to its new and fitting home in our office.





With a 20-second quarter-mile time, one might call it "same-day acceleration." We removed the car's irreplaceable hub caps and side skirts for testing.

The Suits fall for it. The Kurtis gets rolled out of the building, into our tech center for a once-over, and onto a trailer headed to California Speedway with our usual stacks of cones, tools, and Vboxes.

Testing a car like this is like waltzing with Queen Elizabeth. You want the old gal to swing and sway a little but not topple over and bust a hip, for heaven's sake. The car burbled out of the trailer onto the skid-marked lot and loped up onto the scales: 2,835 pounds (not the 2,300 we quoted in 1949; grab a pen and correct your old copies) with a nose-heavy 54/46 front/rear weight distribution. Although its chassis is semi-skeletal—a ladder frame webbed by an origami of welded panels and body-work hangers on top—it still flexed and creaked ominously when we jacked it up to change the tires.

Road test editor Chris Walton fits the Vbox to the Kurtis, and they burble off to the dragstrip. Shortly, they burble back. "Something's wrong," he says. "It initially accelerates OK but then runs right out of power. I can't even reach 60 mph." I try a few figure-eight laps, run into the same issue, and stop in a haze of steam. This probably isn't right. It burbles back into the trailer.

A call to Ken Gross resulted in flathead Ford Zen master, Paul Gommi of nearby San Pedro, draping a cloth over the Kurtis' fender and leaning under the hood. "The vacuum line is misconnected," he says, as if scolding the previous mechanic. "There's way too much advance."

The V-8 sits up unnaturally high, as the engine bay awaits a Studebaker mill that never materialized. The Ford's carburetors are so close to the hood that there's no room for an air filter. "These flatheads easily overheat," he says, "so we'll temporarily replace the coolant with water for your tests so it's just hot water that gets on the chassis. Switch it back when you're done, though, because it'll quickly corrode the engine."

Back at the track, the Kurtis is a lot livelier. Chris burbles back from the drag-strip: "I did some driveline-sympathetic launches from 2,000 rpm and chirped the tires. It's got some good low-end grunt, but the long-throw shifter slows things down. Power ebbs by 4,000 rpm, so I shifted at 3,500. I got into third right before the quarter mile at almost 70 mph, but I can't imagine going 140 mph."

Zero to 60, though? 15.3 seconds, the quarter in 20 flat.

But now that it goes, it doesn't stop. "The brakes have gotten worse," Chris says. "The pedal is springy and long, and there's barely any bite whatsoever." Its 60–0 distance of 370 feet is triple that of a modern car's and longer than a football

Flathead Ford whisperer Paul Gommi diagnoses the Kurtis' spark advance woes.

Chris Walton ensures the GPS-based acceleration and braking data were properly recorded for posterity.

field, goalpost to goalpost. At least there's no steam from under the hood this time.

One good thing about the brakes terrifying you around the figure eight is that they distract you from the car's awful ergonomics: The driver's seat is too low and barely adjusts, and the wheel's rim is too close and has the diameter of a manhole cover. The pedals hover so far off the floor that you have to lift your feet in the air to operate them. And the arthritic three-speed manual is an H-pattern with first gear being left and back and reverse a fearfully close miss as you shank the lever to the right and then far away up to the right to snag second. It's a strange Kabuki dance for a car from a guy like Frank Kurtis, who must have known perfectly well how to build cockpits for finicky race car drivers.

Building speed on the figure eight, I spin the helm through its initial 45 degrees of play and into the right corner. The car starts to sway and then, gradually, corner; the rear suspension is a conventional live axle on longitudinal leaf springs. But the front is independent, sprung by a lateral leaf spring and lever shocks that are oddly integrated into the upper A-arms. I can't see the right corner's cones for the windshield frame, but the tail slightly drifts at 0.5 g. At what point will the tire's willowy 5-inch-wide tread and 6-inch-tall sidewalls peel right off their rims? I stand on the gas out of the corner, and the flathead roars. I quickly lift to start a several-second press against the brake pedal, though its slowing seems more like air drag than brake lining.

I spill the wheel to the left. The world tilts counterclockwise, and I start to laterally slide across the slippery flat-bottom cushion, onto the center tunnel's carpet, and partway onto the passenger seat. On the next lap, I stay on the throttle a second too long. The Kurtis isn't stopping, the corner's turn-in point passes me on the left, and the curbing and fence are 100 feet dead ahead. I'm the lookout in the Titanic's crow's nest, begging this bastard to stop as the iceberg grows.

I'm palpitating. I've driven more expensive cars—though the Kurtis is pretty pricey, to be sure—but this is a piece of history.

Time slows as the distance to disaster shrinks. In my mind's eye, I envision the Kurtis, tragically redisplayed in the center of the *MotorTrend* building as a cautionary warning about hubris, awkwardly tilting on its crumpled right-side suspensions, its fiberglass bodywork cracked, its chrome cladding half-peeled away.

Right thigh aching, I bend the Kurtis into a big, arcing drift and skirt the curb by a few scant feet.

Note to *MT*'s 2049 test team: When you retest this thing for the 100th anniversary issue, fix the brakes. ■

1949 Kurtis Sport Car

BASE PRICE, 1949/2019 EQUIVALENT	$3,495/$37,450
PRICE AS TESTED, 1949/2019 EQUIVALENT	$5,000/$53,575
VEHICLE LAYOUT	Front-engine, RWD, 2-pass, 2-door convertible
ENGINE	3.9L/160-hp/225-lb-ft (est) side-valve 16-valve V-8
TRANSMISSION	3-speed manual
CURB WEIGHT (F/R DIST)	2,835 lb (54/46%)
WHEELBASE	99.3 in
L X W X H	169.0 x 68.0 x 51.0 in
0-60 MPH	15.3 sec
QUARTER MILE	20.0 sec @ 68.3 mph
BRAKING, 60-0 MPH	370 ft
LATERAL ACCELERATION	0.50 g (avg)
MT FIGURE EIGHT	35.3 sec @ 0.37 g (avg)
EPA CITY/HWY COMB FUEL ECON	8/10/9 mpg (est)
ENERGY CONS, CITY/HWY	421/337kW-hr/100 miles
CO2 EMISSIONS, COMB	2.21 lb/mile

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YOU'VE COME A LONG WAY, CADDY

Even with seven decades of design evolution separating them, each car bears a face that will never be mistaken for anything but a Cadillac.

70 MOTORTREND 1949-2019

SEVEN DECADES OF INNOVATIVE CARS AND WAYS TO RANK THEM

WORDS FRANK MARKUS
PHOTOGRAPHS BRANDON LIM

The very first time we attempted to identify "the" car of a particular year was in our November 1949 issue. Instead of rounding up early 1950 model cars and putting them through a rigorous testing regimen, we looked back at the year that had been and selected among the cars that had been on sale for a year, some of which we'd driven.

This was only our third issue, and we'd only "tested" two cars—an MG TC and a Studebaker Starlight Coupe (if you consider eyeballing the speedometer and clicking a stopwatch "testing"). Oh, and the aforementioned "we" wasn't a dozen staffers arguing. Rather, it was a single freelance writer named John Bond. Yes, *the* John R. Bond, who would later go on to edit and publish *Road & Track* magazine. As we still do today, we laid out the ground rules at the top of the piece:

NOTE: In this article, automotive enthusiast John Bond was asked to describe his idea of the most advanced of the 1949 models. Before making his selection, he considered all models, ranging from the Jeepster through the Lincoln, and gave serious thought to the engine, appearance, and handling characteristics. His final choice may be subject to controversy, but definitely has merit.—Editor

The story consisted of a single two-page spread that included one illustration of the car (no photo), two illustrations comparing the new and predecessor engines' exterior size envelopes and crank/rod/piston assemblies, and a confusing chart comparing horsepower/cubic inch, pounds/horsepower, stroke/bore ratio, and "B.M.E.P." (the meaning of which readers were left to divine without Google's help).

The 1,060 words surrounding these compelling graphics made it pretty clear that today's "engineering excellence" COTY criterion was uppermost in Mr. Bond's mind. He was, after all, trained as an engineer, which became obvious as he rationalized his decision. "While the Ford has an entirely new chassis and body, it offers nothing new or outstanding from an engineering viewpoint. The Cadillac was chosen in preference to the Olds because, while both have outstanding new V-8 engines, they are not by any means the same. The Cadillac, with 10 percent more piston displacement than the Olds, develops 18.5 percent more bhp and weighs a few pounds less."

The article is a love letter to GM engineering geniuses Ed Cole and Harry Barr, who cut their teeth designing Cadillac's daring new overhead-valve engine before really making a name for themselves applying lessons learned in this exercise to the Chevrolet small-block V-8. If he had any thoughts about "appearance and handling characteristics," Bond kept them to himself.

That seminal '49 Cadillac V-8 was the continuation of a long line of engineering innovations for the brand, starting with the world's first self-starter in 1912, the first successfully mass-produced V-8 in 1914 (aluminum block and flat-plane crank!), and the spectacular overhead-valve V-16 and V-12 engines of 1931. To continue such innovation in the wake of World War II is a testament to the resilience of GM's technical staff.

In the postwar boom decades, Cadillac V-8s continued to grow in size and power even after the bodywork achieved Peak Tailfin, and the brand has never stopped innovating newer and better creature comforts. Meanwhile, *MotorTrend* continued experimenting with variations of its nascent award concept.

The carefully considered '49 Cadillac interior design is informed by art deco themes, decorated in pleasing high-contrast colors, and fitted with rich materials.

No electronics, no emissions controls, and easy-access serviceability in 1949.

We clung to Bond's engineering fascination for our second award in 1951, acknowledging our bias by renaming it the Motor Trend Engineering Achievement Award. Our February '53 cover was the first to proclaim "Car of the Year," but the trophy still read "Engineering Achievement Award." Scoring points in four criteria (performance, handling, safety, and economy/maintenance), the Cadillac 62 narrowly outscored the Willys Aero overall.

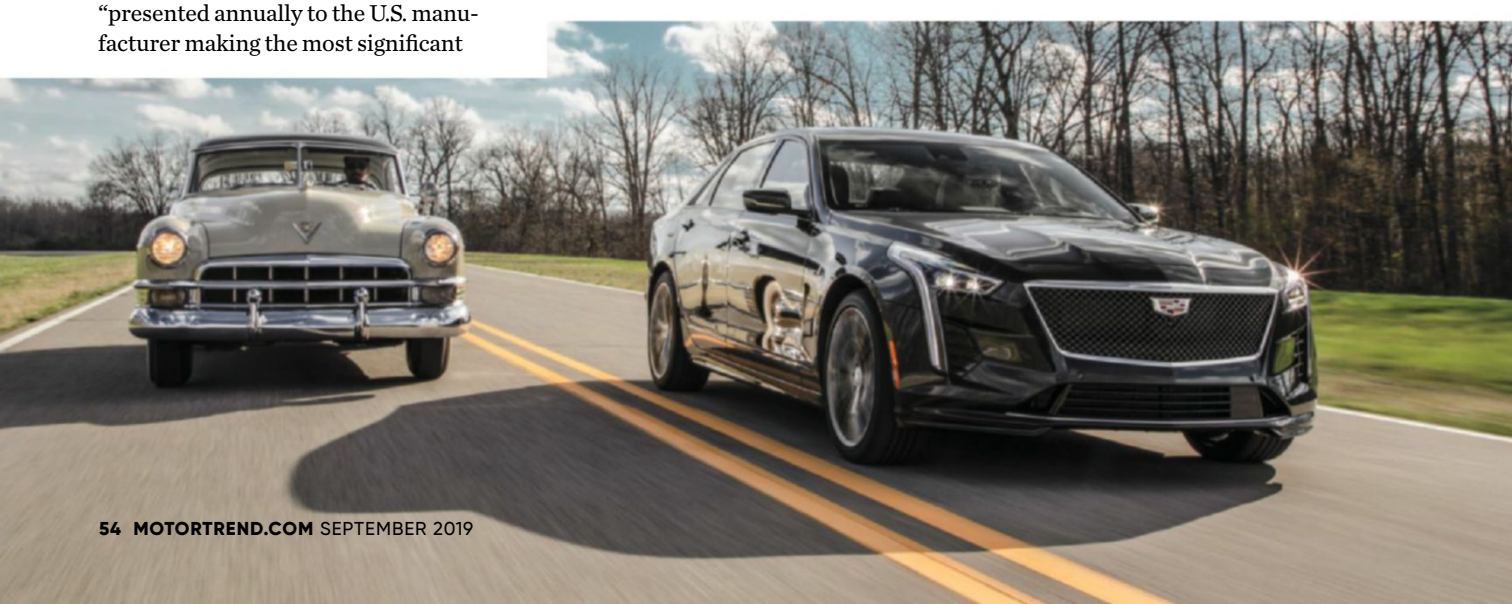
After taking three years off, we instituted "The Motor Trend Award" for 1956, "presented annually to the U.S. manufacturer making the most significant engineering advancement." With power and performance surging, we fretted that safety might not be keeping pace. We selected Ford as our winner that year in recognition of its new collapsible steering wheel and available seat belts and padded dash. Cadillac's smoother-shifting Hydra-Matic transmission received honorable mention.

Although we never discussed a price cap in those days, Cadillac's stunning 1957 Eldorado Brougham must've been eliminated from consideration due to its low production (400) and/or high price ($121,000 in 2019 dollars). Otherwise its full air suspension, low-profile tires on forged rims, six-way power memory seats, and power locks for the standard pillarless carriage-style doors surely would have been hard to overlook.

During the height of the annual-model-change era, we refocused our award to recognize "Progress in Design" in 1962. Meanwhile, Cadillac treated its *Mad Men*–era customers to the industry's first automatic climate control (1964) and heated seats (1966).

Emissions and safety regs, as well as economic doldrums, ushered in the malaise era, featuring some Cadillacs and some COTY selections we'd all like to forget. In hindsight, the "cavalierly" considered Cimarron and finicky V-8-6-4 engines are remembered about as fondly as are *MotorTrend*'s choices of the Chevy Vega ('71), Ford Mustang II ('74), and Dodge Aspen/Plymouth Volaré ('76). During those dark years, some COTY features involved no scoring system or key criteria, and a few failed to even list the competition. Then the rigor pendulum swung the opposite way for 1979 when we instituted an inscrutable scoring system that resulted in a points spread ranging from 70,950 for the winning Buick Riviera to 62,845 for the last-place Mustang.

Cadillac started to really get its mojo back with the 1992 Seville Touring Sedan,



Car of the Year Milestones

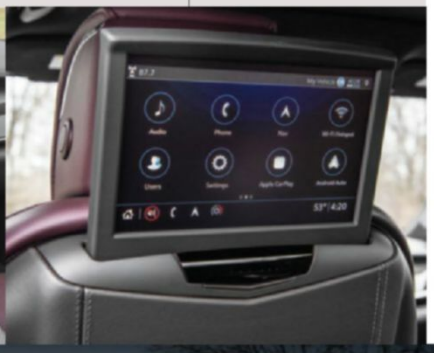
		Winner
1949	Car of the Year is born	**Cadillac**
1951	Motor Trend Engineering Achievement Award, scoring in 13 categories	**Chrysler Corp.**
1953	Four criteria: performance, handling, safety, and economy/maintenance	**Cadillac 62**
1956	The Motor Trend Award for engineering advancement	**Ford Motor Co.**
1961	Car of the Year verbiage finally gets engraved on the trophy!	**Pontiac Tempest**
1962	Caliper-like trophy; focus shifts to "Progress in Design"	**Buick Special**
1967	Modern calipers-on-gear trophy design; three criteria: engineering, styling, and market timing	**Mercury Cougar**
1968	Foreign Car Awards companion piece recognizes the Wankel-powered NSU Ro80 & Mazda Cosmo	**Pontiac GTO**
1970	Panel of five outside judges assist; first Import Car of the Year (Porsche 914)	**Ford Torino**
1979	50 scoring categories using a 100-point scale(!)	**Buick Riviera**
1983	Eight criteria: styling/design, quality control, occupant comfort/convenience, ride and drive, handling, dollar value, instrumented performance, and fuel economy	**Renault Alliance**
1994	No scoring system	**Ford Mustang**
1999	Last year for Import Car of the Year (Volkswagen New Beetle)	**Chrysler 300M**
2001	Ten criteria: design, engineering, quality, interior, special features, fun factor, livability, safety, performance, and value	**Chrysler PT Cruiser**
2005	Down to three criteria: superiority, value, and significance	**Chrysler 300**
2010	Guest judges return; six criteria instituted: design advancement, engineering excellence, performance of intended function, efficiency, safety, and value	**Ford Fusion**

which pretty handily won COTY that year. Five years later Caddy blended GPS and cellular communications to introduce OnStar telematics, then in 2000 the DeVille offered the world's first automotive night vision system.

For 2001 we ranked cars according to 10 key criteria. When that proved a few too many, we condensed it to three in 2005 before leveling off at the six we still use today when determining America's most coveted automotive award. Shortly thereafter, Cadillac began bringing the hurt to the Germans with the terrific-handling, lightweight Alpha-platform ATS and CTS (2014's COTY).

Today another benchmark V-8, the CT6-V pictured here, is poised to hit the market. Cadillac's mighty Blackwing 4.2-liter twin-turbo is ready to take on similar-spec engines in Mercedes-AMGs, Audi RSs, and BMW Ms. Customers snapped up all 275 examples of the $89,785 sedan in a few hours.

Cadillac's latest engineering tour de force would surely inspire John Bond to generate even more glowing praise and compelling graphics. And who knows? Maybe it'll help Cadillac grab the Golden Calipers yet again this year. ■



THE SEMINAL '49 CADILLAC V-8 WAS THE CONTINUATION OF A LONG LINE OF ENGINEERING INNOVATIONS.

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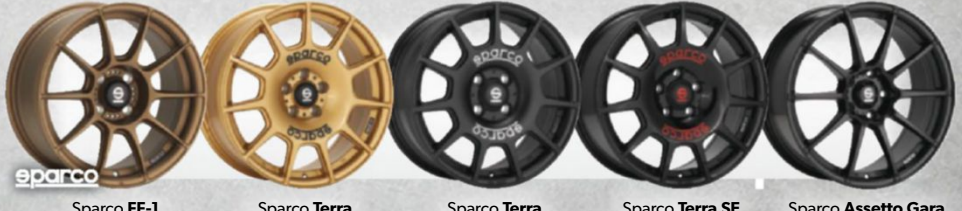

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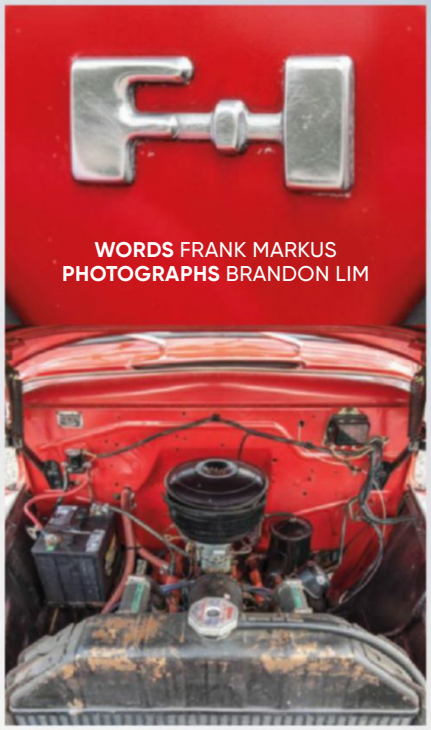


WORDS FRANK MARKUS
PHOTOGRAPHS BRANDON LIM

In the late 1940s Detroit had just finished winning a war. America was in an ebullient, optimistic mood. The economy was booming, suburbs were sprouting like spring weeds, and everybody was replacing cars and trucks that had largely worn out during the auto industry's 44-month diversion to Arsenal of Democracy duty.

The folks building this new American dream needed trucks to get the job done, and when their work was done, they wanted to come home to their suburban paradise and be informed and entertained reading about their latest obsession: cars.

Ford read these tea leaves and plowed the bulk of its engineering might into redesigning its entire truck range first, following with cars a year later. At about the same time, Robert "Pete" Petersen, who'd just launched a magazine aimed at his dry-lakes hot-rodder pals (*Hot Rod*), aptly observed that America's motoring public had no source for objective reporting on the automotive mainstream, and he stepped in to fill that need. Ford's F-Series development team and the *MotorTrend* staff have each spent seven decades innovating ways to better serve their core constituencies.

In the late '40s, most of what was written for car-buyers came from newspaper auto sections, and many authors of these sections also called on car dealers or car companies to sell the ads that ran in their section. Not surprisingly, their work was short on "criticism." Pete and his pal Walt Woron dreamed up the name *Motor Trend*. As editor, Walt sought to emulate the work of Britain's *Motor* magazine. He made it *MT*'s mission to report on the whole industry, rather than focusing on sports or foreign cars as our competitor *Road & Track* was doing. This meant delivering rigorous objective testing, reporting on future automotive technologies, covering current industry and motorsports news, and exploring the latest trends in car culture—the epicenter of which was our Southern California home.

Fresh postwar design integrated the headlamps, grille, and front fenders. The hood is released by pulling the bar in the upper left hood nostril.

PUBLICA

SOLID CITIZENS SERVING A MOTORING WORLD FOR 70 YEARS—FORD F-SERIES AND *MOTORTREND*

Our early "Motor Trials" road tests involved careful stopwatch timing of acceleration, measurement of braking distances, fuel economy, and often top speed—all on public roads. (California's rural highways lacked posted speed limits until 1960.) In the beginning, the test vehicles were borrowed from dealerships, often with a salesman chaperoning.

Ford's spanking-new line of F-Series "Bonus Built" trucks for 1948 was available in 115 body/chassis combinations covering weight class rankings from 1/2-ton to 3-ton, badged F-1 to F-8. The roomier all-steel "million-dollar cab" featured such sybaritic refinements as an ashtray, a glove box, cowl and vent-window ventilation, a coil-sprung bench seat, and rubber isolation for the cab mounts. The base F-1 pickup truck with a 95-hp 226-cubic-inch L-head straight-six cost $1,212, or about $13,100 in 2019 money; our example's 100-hp 239-cube flat-head V-8 added $20.

The low purchase price belies the dearth of standard equipment available on these workhorses—even the passenger-side windshield wiper cost $3 extra. Today's cheapest rear-drive, regular-cab, short-box F-150 XL with a 3.3-liter V-6 starts at $29,750. The loaded F-150 Limited 4x4 pictured here stickers for $74,180, and a top-spec F-450 Power Stroke diesel is $95,320—obviously the levels of standard equipment and technology are miles more advanced.

In the 1950s we instituted dynamometer testing and adopted a Tracktest fifth-wheel speedometer/distance meter to eliminate vehicle speedometer error from our test results. News and trend

reportage covered the flying Helicar and Aerocar concepts (August and December 1951), the prospect of atomic-powered cars (April 1951), and the likely effect of a nuclear blast on a car (August 1953).

Car culture coverage included loads of customizing features. And we didn't just report on racing. We raced. New York editor John Bentley finished fourth in the Watkins Glen Grand Prix in a Cunningham (January 1952), Detroit editor Don MacDonald set a class record in NASCAR's "Flying Mile" at Daytona Beach (May 1955), and we set two speed records at Bonneville in 1959—tech editor Chuck Nerpel in a streamlined formula car, Wayne Thoms in a Borgward.

Ford spent the '50s introducing improvements like the Ford-O-Matic transmission in 1953, tubeless tires and optional power brakes in 1955, and the first factory four-wheel-drive system in 1959. (Earlier 4x4s were converted by outside firms.) In 1953, F-100 nomenclature was introduced (possibly inspired by the F-100 Super Sabre jet fighter), and in 1958 the Super Duty name appeared on heavy-duty trucks, along with a new 534-cubic-inch V-8. For 1959 a new front bumper design arrived and remained unchanged for 20 years.

THE BASE F-1 PICKUP COST ABOUT $13,100 IN 2019 MONEY; TODAY'S F-150 STARTS AT $29,750.

Over the next two decades, 0–60 testing by *MotorTrend* and others fueled the horsepower wars. We sponsored the Motor Trend 500 NASCAR road race at Riverside International Raceway from 1963 to 1971. During Eric Dahlquist's editorship, focus shifted toward pop culture trends and leading-edge automotive tech, including tests of potential moon buggies (August 1970) and of the latest radar detectors (August 1976). Our circulation doubled in five years. Skidpad testing arrived in December 1971, and our fifth-wheel test gear began recording to a computer in the late 1970s.

Ford introduced myriad special F-Series models. The 1961 Camper Special was optimized for slide-in pickup-bed campers; 1968's Contractor Special and Farm and Ranch Special added toolboxes and heavier-duty suspensions; and the 1968 Trailer Special featured a trailer-brake controller, heavy-duty radiator, transmission cooler, and hitch. In 1965 Ford's Twin I-Beam front swing-arm suspension replaced the solid axles that virtually all pickups had been using, improving ride comfort. A steady march upscale began with the fancier Ranger trim in 1965, when the four-door crew cab became available on F-250 and F-350 models. Nine years later the extended cab bowed on smaller F-Series trucks. In 1975, a new model with a 6,000-pound GVWR, conceived as a catalytic-converter dodge, was dubbed F-150. A year later Ford became America's best-selling truck. For good.

In the '80s and '90s *MT* instituted the 600-foot slalom maneuver (1985) and switched to the Stalker Acceleration Testing System (1995). This radar-gun-and-laptop setup sped up our tests, allowing us to measure 300 cars per year. We also started a series of special interest stories—car-versus-plane tests, top-speed shootouts, etc.—and our Of The Year programs expanded to recognize trucks (1989) and SUVs (1999). Ford's F-Series has won our calipers six times, a number no other full-size truck has topped.

Ford took the significant safety leap of making rear anti-lock braking standard on its trucks (1987) and also went big on

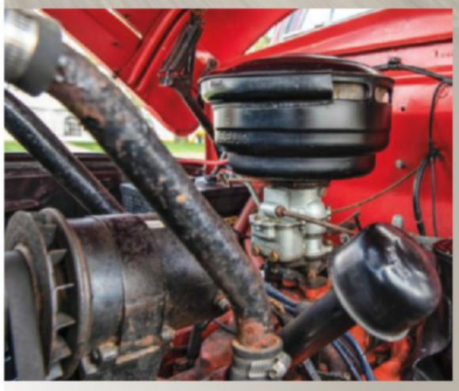
special editions in these decades. There were posh options like Eddie Bauer (1995) and King Ranch (1999) and performers like the mighty SVT Lightning (1993) and the NASCAR edition (1998) that celebrated Ford's entry into the Craftsman Truck series, which it won in 2000.

In the decades since, Ford has improved the F-Series' capability and efficiency by introducing twin-turbo V-6 engines and 10-speed transmissions while replacing steel bodywork with "military-grade aluminum." The desert-racing Raptor has replaced the drag-strip-optimized Lightning, and trailer reversing can be done with a knob.

Meanwhile, *MotorTrend* launched our figure-eight test, transitioned to GPS-based speed/distance measurement, and embarked on our ambitious chassis-dynamics evaluation program, Best Driver's Car. These have measured everything from chassis slip angle, steering input, body roll, and ride quality to driver heart rate and facial expression. Today we deliver content across print, digital, social media, streaming video, and television platforms to reach the largest total audience of any automotive outlet.

Pete Petersen, Walt Woron, and Hank the Deuce are undoubtedly proud of the solid citizens their respective babies have grown into. ■

The "Million-Dollar Cab" looks mighty spartan these days. Note the rubber floor, lack of armrests, and door pulls stamped into windowsills.



Seventy years is a long time. Few vehicles can date their lineage back that far. Fewer still can trace back anything more than a few signature design cues. Then there's Jeep and the iconic Wrangler, which can draw a direct line in the sand of Omaha Beach back to World War II military vehicles and the civilian SUVs they inspired.

Pulling a 1945 Willys-Overland CJ-2A from FCA's heritage collection and lining it up against a 2019 Jeep Wrangler Rubicon is a humbling experience for the homage the current JL pays to its past.

As *MotorTrend* celebrates its 70th anniversary, we take you on a bit of a walkaround of two Jeeps, both built in Toledo but 73 years apart. We hope you're as pleasantly surprised by this tale of morphing as we are.

Quick history recap: The original jeeps were designed for military use only. "Jeep" was a nickname then, derived either from slurring the GP reference to its "General Purpose" vehicle moniker or from Eugene the Jeep, the mystical creature from the Popeye cartoon strip. Government specs called for a 1,200-pound, three-passenger vehicle with an 80-inch wheelbase that a burly sergeant could drag out of the mud. It had to have 45 horsepower, and the windshield had to fold flat so it could fit in a shipping crate sideways, with room for the four tires.

The specs were derived by government officials, not auto engineers, for a vehicle to replace motorcycles and army mules, explains Brandt Rosenbusch, FCA's Historical Services manager. Of 135 companies approached, Willys and Bantam responded. In the end, neither met the unrealistic weight requirements, and Willys ended up making a version of the Bantam concept, having the wherewithal for high-volume production and a 60-hp Go Devil four-cylinder engine.

The first 1,500 MA (Model A) early builds had rounder fenders and a more tapered hood. The revised MB became the standard military jeep. During the war Willys built 358,000 MBs. When they ran out of capacity, Ford had a contract to build 250,000 more, calling theirs the GPW.

"Willys designers nailed it," Rosenbusch says. Line up every generation of CJ and Wrangler, and there is no doubt they are related. You can see the progress while staying true to their roots.

There was civilian lust for jeeps even back then. After the war, surplus military jeeps were sold off to the public, while Willys modified the MB into the first civilian Jeep—hence the name CJ—for

NOW & THEN

THE 1945 CJ-2A LIVES ON IN THE 2019 JEEP WRANGLER RUBICON

WORDS ALISA PRIDDLE **PHOTOGRAPHS** BRANDON LIM

farmers, ranchers, hunters, even meter maids. The automaker added a tailgate, a side-mounted spare tire, and an optional canvas top. The grille changed from nine slots to seven. Over the years the number of slots ranged from 0 to 22. In 1996 Jeep made the historic seven-slot grille its trademark.

The first CJ-2A, also known as the Universal Jeep because it could do anything, rolled off the line in Toledo on July 17, 1945. This museum piece is No. 33, resplendent in Harvest Tan with Sunset Red wheels, one of only two color choices at the time. The Jeep name is stamped in cursive letters into the base of the passenger seat, a real rarity; since then, the name Jeep, which Willys eventually copyrighted, only appears in block letters.

This SUV is also rare for its three-on-the-tree column shifter, which was only installed for the first month before Willys switched to a floor-mounted three-speed. Shifting can be tricky: The stalk goes down for first, up and over a bit for second, then back down for third. Reverse requires you to pull the stalk forward and then up. Stalling is common, and power surges make it hard to maintain a slow speed.

During our time with it, we lost all the gears a couple times. But Rosenbusch tinkered with it until it was drivable again. Sort of. He did have to make the half-mile trek back to the garage at FCA's Chelsea Proving Grounds in reverse. He has the neck kink to prove it.

The CJ-2A has a lot of military bones. It kept the same 65-hp engine with a top speed of 35–40 mph. The toe start pedal is to the right of the accelerator and needs a pretty strong stomp once the clutch is in. There's a choke button to start a cold engine and a hand throttle to run the power takeoff in back at high speeds to run saws, drills, and farm equipment. Two short levers on the floor manually engage the front axle and set the transfer box to high or low. There's also a hand brake. No doors or rollover protection. "You sat on the gas tank and smoked," Mark Allen, head of Jeep design, says.

Fast-forward to 2019, and this fourth-generation Wrangler brings back a four-cylinder engine—but now it's a 270-hp 2.0-liter turbocharged I-4 with a mild hybrid assist, auto stop/start, and eight-speed automatic transmission.

It has a protective cage structure (and of course no gas tank under the front seat).

The '45 CJ has a folding windshield hinged to swing forward from the bottom, with a strap to hold it down. It also has brackets for a gun rack. On today's Wrangler, the windshield still folds—in less than four minutes, like the CJ-2A's, versus the two hours it took on the previous JK model. Wranglers come with a toolkit to remove the windshield and doors, paying homage to the toolkit under the passenger seat of military jeeps.

THE WRANGLER HAS PACKED ON SOME POUNDS WITH AGE: FROM 2,200 TO IN EXCESS OF 4,000.

For civilian use, the CJ needed a 7-inch headlight for use on roads, larger than the 5-inch lights on the MB. In back is a taillight on the driver's side and a reflector on the passenger side. No turn signal. The windshield wiper is vacuum-operated in front of the driver; on the passenger side you have to move it manually.

The Wrangler has packed on some pounds with age. The military-issue MB weighed about 2,200 pounds and carried enlisted farm boys and city slickers who lived on K-rations and cigarettes. Today's Wranglers can easily exceed 4,000 pounds, and occupants come in many more sizes.

This '45 CJ-2A was found in Indiana in 1997, Rosenbusch says. The private owner used it to pull homecoming floats. It had about 15 coats of house paint that had to be stripped but no major damage to the frame or body. When Chrysler opened a museum in 1998, the Jeep was on display.

While the Jeep lineup has expanded, the Wrangler has remained the center of the brand's universe and gets special treatment, Allen says. That's why the newest Wrangler still has exposed hinges and a tailgate that isn't integrated into the body. Doors, roofs, and heaters were options until the early '80s. Air conditioning is still an option today, but modern Jeeps also have heated seats and steering wheels, big infotainment screens, and USB ports.

The Mojito green Wrangler Rubicon we drove alongside the CJ owes a lot to its

A true homage to the past: The Wrangler's doors and roof are easy to remove to celebrate open air on the open road.

For civilians, Willys added a tailgate, a side-mounted spare tire, and an optional canvas top.

predecessor. The basic technology and placement of main components is exactly as it was 77 years ago: ladder frame, four-cylinder, driven front and rear axles, transfer case, no side mirrors. Even the battery is in the same location. Trapezoidal wheel arches derive from the original's simple mud guard, and the floor still has drain holes. The Wrangler retains the original wheel position; the leading edge of the front tire is forward of the grille, which sets the stance for the whole vehicle. Such deference to the original makes Allen proud, as modern-era Jeeps stash so many more items under the hood, making the integration of design and engineering that much more of a challenge.

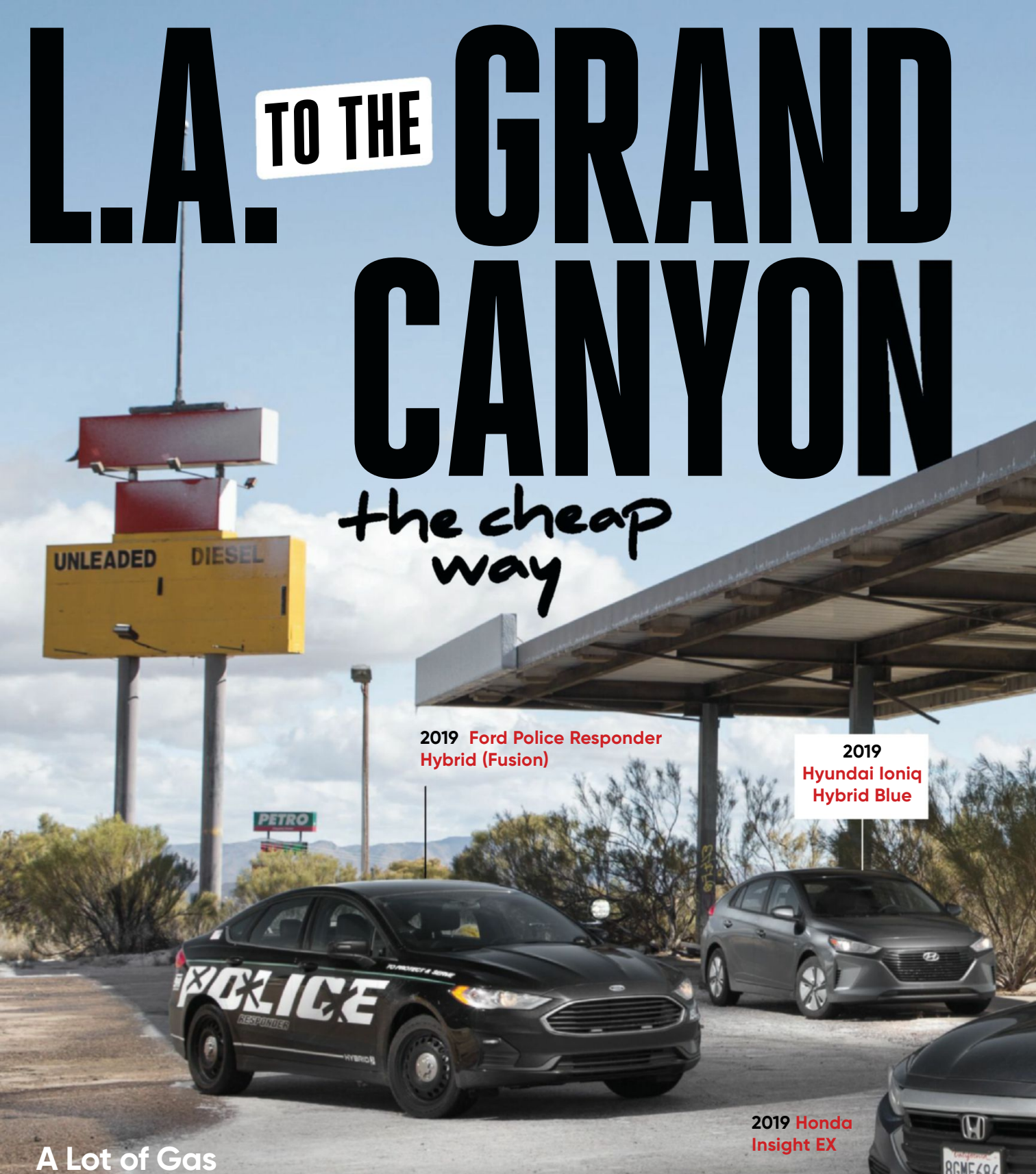
Allen loves the CJ-5, as when the square hood began to taper, the fenders gained more shape. But it was the YJ that saved the franchise in 1986. It introduced a new look, sitting lower and wider, with square headlights and a new name: Wrangler.

What started as a utility vehicle or work truck has fully evolved into a lifestyle vehicle. Owners quickly discovered the joy of off-roading, holding their first jamborees on the Rubicon Trail in the '50s. Jeep became a fun vehicle that people were proud to own. That spirit continues today and has ensnared a loyal customer base for a vehicle in continuous production for more than seven decades.

The Wrangler is more coveted today than it has ever been. It's the perfect marriage of past and future. Creature comforts have been added, and it has more power, more safety, and better efficiency. But owners can also crawl all over their Jeep and find a bevy of elements that lead directly back to the Wrangler's forefathers, driven into battle by young men who stopped to have a cigarette, sitting atop the fuel tank. ■

L.A. TO THE GRAND CANYON

the cheap way



2019 Ford Police Responder Hybrid (Fusion)

2019 Hyundai Ioniq Hybrid Blue

2019 Honda Insight EX

A Lot of Gas

I have made a terrible mistake.

Gallons of gasoline spew wildly, spectacularly, apocalyptically out of the Ford police cruiser. As I dash to stop the potential conflagration—my ears abuzz with furious hornets, my vision narrowing with the dreaded rose mist—I wonder how I'd gotten myself into this mess.

Nearly 70 years ago, in the April 1950 issue of *MotorTrend*, we published what was our first road trip story—a Mobilgas-sponsored fuel economy run from Los Angeles to the Grand Canyon via Las Vegas.

The rules were onerous: You had 18 hours and 30 minutes to drive your stock sedan in the most efficient possible manner, with the winner determined by their overall "ton-mpg"—calculated by the weight of the car and passengers in tons times miles traveled divided by gallons consumed. The winning V-8-powered Mercury managed 26.52 mpg over the run, achieving 61.27 ton-mpg. It proved to us—and

The view from the Grand Canyon: Miguel isn't convinced it actually exists.

550 MILES, 10 HOURS, AND A FULL TANK OF GAS

MOTORTREND 70 1949-2019

WORDS MIGUEL CORTINA, SCOTT EVANS, CHRISTIAN SEABAUGH **PHOTOGRAPHS** JADE NELSON

the consumer—in those pre-EPA days how efficient a modern car could be if driven economically.

To pay tribute to our magazine's first road trip while proving how much the automobile has evolved, *MotorTrend en Español* managing editor Miguel Cortina, features editor Scott Evans, and I set out to retrace our steps from L.A. through Vegas and on to the Grand Canyon, but we'd given ourselves some new rules: Instead of 18.5 hours, we'd have just 10; we would follow no set route, just a single Las Vegas checkpoint; we could pick any vehicle; and the winner would be declared via some sketchy cocktail-napkin math determining who spent the least amount of money on gas combined with the least amount of time on the road. As modern Americans have proven with our desire for SUVs and pickups, we might not care about fuel economy, but we *do* care about our wallets.

In an attempt to keep us all honest, each of us would be outfitted with a stopwatch and a fuel chart. A simple scatter plot would verify the results.

In the months prior, we sequestered ourselves to figure out our respective strategies. There were really two schools of thought: You could figure out some harebrained route to the Grand Canyon at slow but efficient speeds on back roads with favorable elevation changes and light traffic—I figured Scott and Miguel would take that path—or you could hedge your bets by taking the much quicker freeway. The latter was my choice.

Getting to the Grand Canyon from L.A. isn't rocket science; President Eisenhower took out all the guesswork in the 1950s when America constructed the interstate highway system. I'd simply take the interstate to Las Vegas and then another one to the Grand Canyon. Easy.

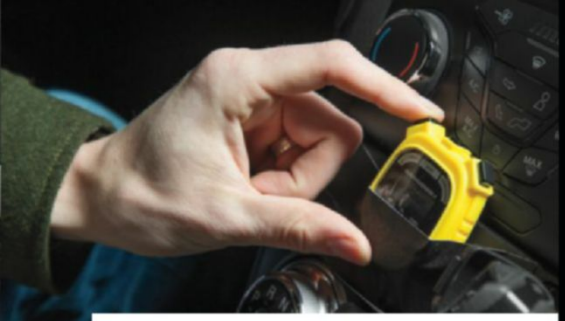
MT's lawyers are good, but not get-out-of-jail-for-impersonating-a-cop good. Gaffer's tape over the word "Police" would hopefully help Christian avoid any unwanted interactions with law enforcement.

The harder choice was picking my car. Again, tons of considerations came into play here: powertrain, energy cost, range, time to fill. I boiled my requirements down to two simple ones. I wanted a hybrid with the range to finish on one tank, and I wanted something that wouldn't bore me to tears. My initial instinct was to get a Lexus LC 500h. Fast. Sporty. Gorgeous. Efficient. But its lust for premium fuel meant there'd be no way I could get to the Grand Canyon with enough of a time window to make up for the cost differential if Scott or Miguel went the hypermiling route.

Instead, I picked the 2019 Ford Police Responder Hybrid. The cop-spec Fusion has a lower curb weight, a 38-mpg combined rating, a big enough tank to make the trip in one shot, and lights, sirens, and a bullhorn to keep me entertained. Plus, it has a bulletproof door. That's gotta count for something. I was convinced I could win simply by driving at the speed limit on the freeway and selectively drafting off big-rigs.

I still entertained that foolish confidence when Scott and Miguel pulled up to our starting line at *MT*'s local Chevron before dawn, a late-winter chill in the air. As I expected, both looked prepped for self-torture. While I hoped to prove efficiency and fun could happily coexist with my Fusion cop car, Miguel was bundled up to deal with the cold—a sign he wasn't planning on running the HVAC system in his blob-shaped 2019 Hyundai Ioniq Blue. Meanwhile, Scott, driving the *MT* Garage's 2019 Honda Insight EX, was armed with a Bluetooth speaker and portable batteries for his phone so he could produce the world's most boring Instagram stories. Glad I wasn't riding with either of them.

The calm before the storm—or during, actually. Our L.A. starting line had just been soaked by rain.



Things didn't get interesting until after I'd crossed the halfway point in Las Vegas. Despite exceeding EPA estimates at 41 mpg, my distance-to-empty meter didn't make me happy: 235 miles of range with 270 miles to go. I could make up that 35-mile difference, I reasoned, by easing my speed below the posted limit. I turned the cop car south toward Arizona.

My optimism faded as I confronted a nasty headwind. Over the next few hours, I watched helplessly as my mpg ticked down, settling at 35.

A weather report from the finish line put a final nail in the coffin of my plan: Snow was blanketing the 70 miles surrounding the Grand Canyon.

I dropped my speed down further, to a crawling 55 mph, to buy myself some time while I figured out a backup plan. Not long after, I got a glimpse of a driver beaming ear to ear, rapidly approaching in my rear-view mirror. It was Scott in his Insight.

As he disappeared ahead of me, over the horizon, I decided I'd stop for gas and attempt to catch him and Miguel on I-40. I figured the headwind had to hurt them, too, and that despite their cars' superior efficiency, both would have to stop. The snow, I reasoned, would slow them even more, as their hybrids' low rolling resistance tires would slip in the slush.

I picked the first gas station I saw as I dumped into Kingman, slid the pump into the Ford's capless fuel filler, clicked the handle in place, and stepped back to fill out my fuel log.

Without warning, gas geysered out of the side of the Ford. I dropped the fuel log and ran toward the car. Ducking the spray,

What's in it for you?
Here's why this story matters

Hybrid or pure internal combustion? It's a question we've been asking ourselves for two decades now, and as the number of hybrid options grows, consumers won't find the answer any easier. Although traditional gasoline vehicles have upped their fuel economy game, hybrids still have a huge advantage. If fuel economy is among your primary concerns and you're thinking about getting a hybrid, there are a few things you'll need to know.

Today's SUVs and sedans are more efficient than before, but there's still a significant difference between a hybrid and a non-hybrid. Take the Toyota Camry, for example. According to the EPA, those who buy the Camry Hybrid LE will spend about $850 per year on gas, compared to $1,350 for the Camry LE—an increase of more than 58 percent. The difference is also significant in actual fuel economy numbers, as the hybrid gets 20 mpg better than the regular model. Of course, there's a $3,800 sticker price jump for the hybrid, so you'll need to drive a lot of miles to make up the difference.

As gas prices continue to increase (and they will), you'll also notice a significant difference at the pump. In February, when we wrote this story, the national average for gas prices was $2.27 per gallon. At the time of this issue's closing, the national average of gasoline prices increased to $2.86—an increment of more than 25 percent in four months.

The Honda Insight made it from Los Angeles to the Grand Canyon via Las Vegas on only $31.83 worth of gas. That's a bargain. Granted, Scott was trying to save as much fuel as possible, but even if he'd driven with the radio on, the Insight—or the Hyundai Ioniq Blue, for that matter—is a great example of how far you can drive without stopping to pump gas.

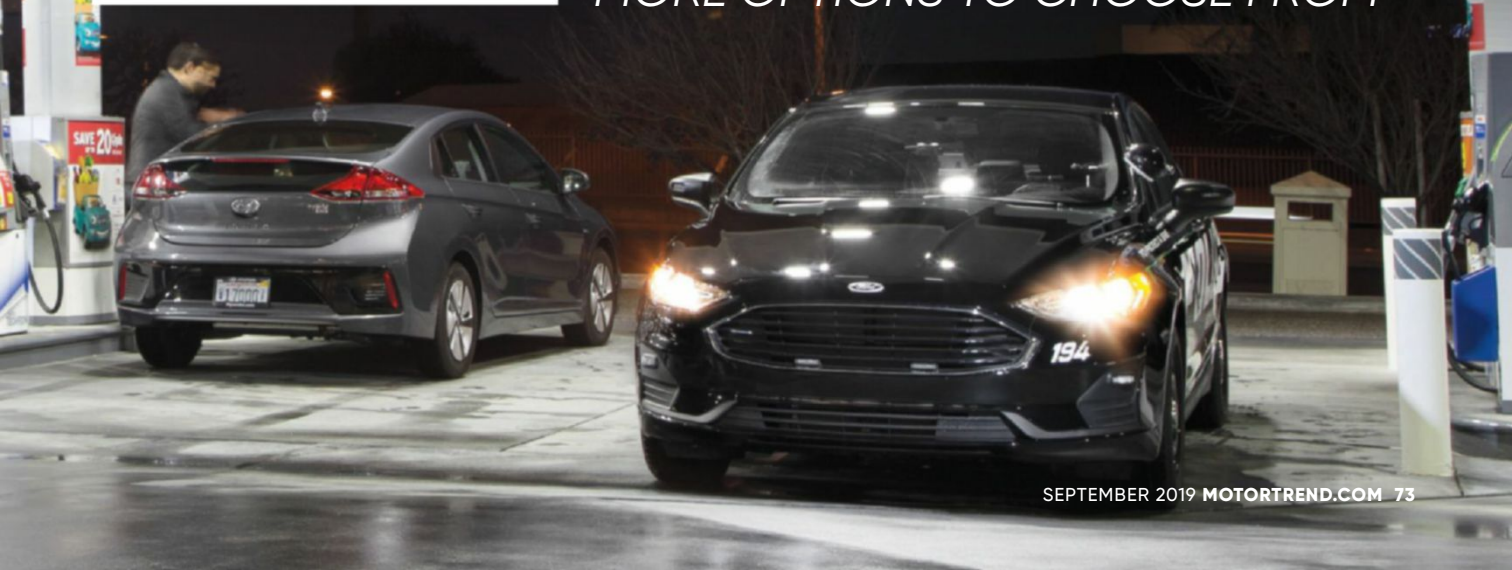
But real-world behavior matters, too—and that's also one of the reasons we wrote this story. Hybrid and regular cars will both take you from point A to point B, but how they do it is different.

For starters, hybrids are heavier, as they have to carry a battery, but that doesn't mean they have to be slower. Look at the Toyota RAV4. The all-wheel-drive RAV4 Hybrid delivers 219 hp and goes from 0 to 60 mph in 7.5 seconds while getting 41 38 mpg. Compare that to the loaded front-drive RAV4 Limited with regular gas, which produces 203 hp and gets to 60 mph in 8.2 seconds, averaging 26 35 mpg. In this case, the hybrid is the clear winner, as it gets more power with less gas. But again, comparably equipped, the hybrid version carries a price bump.

As technology improves and hybrids deliver even better fuel economy numbers, engineers will also deliver them with better acceleration and handling. Hybrids are no longer just the green alternative. They are the mainstream, and as such, they need to carry mainstream driving dynamics. With manufacturers doubling down on their efforts to offer more hybrids, consumers will have even more choice.

Miguel Cortina

WITH HYBRIDS BECOMING MORE MAINSTREAM, CONSUMERS HAVE MORE OPTIONS TO CHOOSE FROM



The aftermath of the fuel spill and the end of Christian's shot at winning.

I released the filler's handle. The stream mercifully stopped.

I had made quite the scene. I looked around warily. The woman in the Jeep across from me pretended to be hyperfocused on her headlights. The couple in the camper van feigned confusion at a paper map. A bell tinkled behind me. Short and stocky and sporting face tattoos and a Chevron polo shirt, a man looked at me quizzically, unsure why this long-haired, tattooed dude in a band T-shirt and jeans was messing with a cop car. *Undercover? Grand theft? Escaped felon?*

"The pump just started spraying everywhere," I offered lamely as I started wiping down the cruiser. "Yeah, that pump's been actin' up lately. I'll go grab some litter," he said, sufficiently satisfied that I wasn't on the run.

We finished cleaning up, and I paid the nearly $50 bill before peeling out.

New new plan: If I wasn't going to win on the cost of fuel, I was at least going to get there first, even if it didn't result in an outright win. I knew Scott and Miguel were somewhere ahead of me, hypermiling away as they attempted to avoid stopping for gas.

As the Ford burned up miles, I scanned the highway and roadside gas stations for signs of the others. Ahead on the right, an Arizona State Trooper helped a car out of a snowbank. Was it one of the guys? No—just a pickup that had gone off the road. Mid-conversation, the trooper paused, watching curiously as a black-and-white piloted by some hippie-haired kid flew by.

Soon after, I found my cohorts. Off to the right at a gas station, I spotted the gray Ioniq, Miguel hurriedly running around the nose. Shortly thereafter, I came upon a smug blue Insight limping along at 20 under the limit. It was Scott, frantically scanning the shoulder for a gas station.

I bid Scott adieu over the cruiser's squawk box.

Then I floored it. **Christian Seabaugh**

A run beyond the finish line

I have made a terrible mistake.

I couldn't hold it any longer. The pressure in my rectum was intensifying, and sweat beaded on my forehead. If there was a muscle in my body, it was clenched. I was fearing the worst—pulling off the highway and running into the bushes—but the next gas station was mercifully close.

The tension in my body was such that when I parked the Ioniq at the Chevron station in Seligman, Arizona, I sprinted inside and blurted, *"¿Dónde esta el baño?"* Any English vocabulary was long forgotten, but my needs were obvious enough, and the attendant pointed me toward relief. The open toilet seat was the most satisfying thing I had seen all day.

I didn't mind losing the lead. Avoiding soiled boxers was the new victory. But with 90 miles of range and 95 miles to go, my chances of winning the race were slim.

I was doing so much better on the L.A. to Vegas leg, averaging 59.5 mpg per the car's trip computer, and I had a little more than half a tank left. Based on the projected

The Mobilgas Economy Run began in 1936. The final iteration was supposed to be held in April 1968 but was canceled after the assassination of Martin Luther King Jr.

range, I was certain I was going to make it to the finish line without stopping—320 miles remaining for a 270-mile trip—but I wasn't taking into consideration the strong headwinds and the steep inclines we had to traverse on Highway 93.

The good thing was that each of us was facing the same conditions. But the others were not suffering the distress caused by the deep-fried appetizers and German sausages from the night before. I had passed many gas stations that required no detour, but I hadn't stopped because I was grasping at hope that I could make it on one tank—and one colon. It was not to be.

Back on the road 10 minutes later, I couldn't stop thinking how different this fuel run was from the original. The "Mobilgas Grand Canyon Run" story had more than 300 officials from AAA collaborating; they disassembled each participant's engine and measured each component to ensure it was stock. Things were a little more formal in the '50s, but our goal remained the same today. As we wrote in that issue, fuel economy is one of the features "that determines, to a large extent, the advisability of buying a particular model car."

Hence my choice of the Hyundai Ioniq Blue as my carriage. My decision was made easy: Log onto the EPA fuel economy website and find the Best and Worst Vehicles section. I knew a plug-in hybrid or EV would jeopardize my strategy, as I would need to find a charger in Vegas. Too time-consuming. So a regular hybrid was my starting point.

The Ioniq Blue can deliver 58 mpg combined, per the EPA, and it was the

The Interstate Highway System The history behind the story

In June 1956, President Dwight D. Eisenhower signed a landmark piece of legislation he'd been championing for years. The Federal Aid Highway Act of 1956, more commonly known as the National Interstate and Defense Highways Act, authorized $25 billion (more than $235 billion in today's money) for the construction of 41,000 miles of interstates over 10 years.

Popular lore tells of General Eisenhower's interest in the strategic value of Germany's autobahn during the war and his desire to replicate it at home. But the history is much longer than that. In fact, it predates both World War II and World War I. It does not, however, predate Eisenhower.

As popular interest in the automobile ignited in the early 1900s, Congress recognized the need for better roads for both strategic and commercial reasons, and it permanently established the Office of Public Roads under the Department of Agriculture in 1905 (now the Federal Highway Administration under the Department of Transportation). The Office of Public Roads released its first proposal for 12 transcontinental highways in 1911 based on submissions from "Good Roads" organizations around the country.

Carl Fisher, the founder of Indianapolis Motor Speedway and believed to be the first owner of an automobile dealership in the country, conceived and launched a fundraising campaign to build the Lincoln Highway (later U.S. Route 30) from Times Square in New York City to Lincoln Park in San Francisco in 1912. He officially dedicated the highway in October 1913.

It wasn't until 1916 that Congress opened its checkbook with the Federal Aid Road Act, signed by Woodrow Wilson to build rural postal roads. Little actual work was done before the U.S. entered World War I, sapping resources and labor.

After WWI, then–Bvt. Lt. Col. Eisenhower participated in the first-ever military transcontinental convoy in the summer of 1919. More than 80 Army trucks and other vehicles trundled down the Lincoln Highway, covering 3,251 miles in 61 days—an average of just 53 miles per day—in a test of military mobility (or immobility) in the event of invasion. Eisenhower would later credit that experience, as well as lessons learned in Germany in World War II, for his desire to build America's Interstate system.

The Federal Aid Highway Act of 1921, replacing the expiring 1916 act, both increased funding for highway construction and resolved a number of technical and legal issues in the earlier act. It was the Pershing Map, commissioned by the Bureau of Public Roads and overseen by Army Gen. John J. Pershing in 1922, that laid the groundwork for a national highway system. The first official topographic map of the United States, it included 78,000 miles of roads in three categories of priority, with an emphasis on the coasts, transcontinental routes, and border crossings. Most of the routes identified by Pershing's commission would become federal highways.

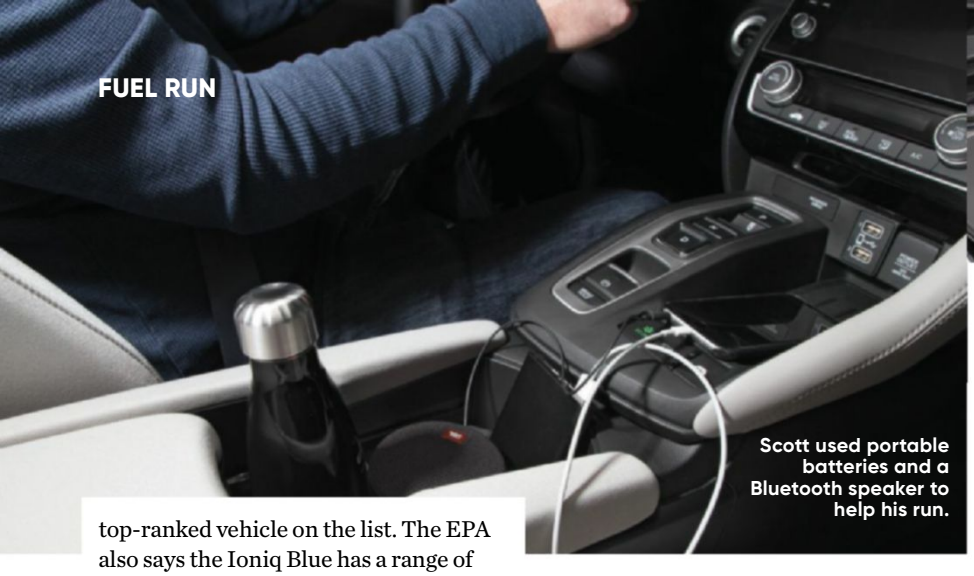
The first formal standards for road signs would be adopted in 1926, along with the plan to officially number highways with a white shield. But it was the Depression-era New Deal suite of job-creation programs that would get tens of thousands of miles of highways actually built in the mid- to late 1930s, including the famous Route 66.

America's involvement in World War II would again spur a military incentive for road building. That's part of the reason the disconnected states of Alaska and Hawaii have "interstate" highways—to connect population centers with areas of industry and to promote national defense.

The Federal-Aid Highway Act of 1944 authorized but didn't fund 40,000 miles of highways. Funding would not appear until the Federal-Aid Highway Act of 1952, in a token amount. It was Eisenhower, upon taking office in 1953, who would finally kickstart the interstate system.

With the Federal-Aid Highway Acts of 1954, 1956, 1958, and 1959, the Eisenhower Administration greatly increased federal funding for the Interstate system and established the Highway Trust Fund to build and maintain the new roads, funded primarily by a tax on gasoline. **Scott Evans**

The Honda Insight passes the Fusion cop car as the Ford drops back in an attempt to preserve fuel.



Scott used portable batteries and a Bluetooth speaker to help his run.

top-ranked vehicle on the list. The EPA also says the Ioniq Blue has a range of 690 miles—more than enough for the 550 miles or so that we needed to cover. I didn't care about the Ioniq's deficient driving dynamics or the head snap delivered by the poorly calibrated six-speed dual-clutch automatic transmission. I cared about having the best fuel economy and winning.

After my peristaltic panic cost both time and money—I'd overlooked the big, bold sign announcing $3.89 per gallon at that Chevron in Seligman—my concern for winning was all but gone. In retrospect, I could have done more to find the cheapest fuel instead of relying on the Ioniq's remarkable efficiency to carry it all the way to the finish line. Nothing, however, could have prepared me for the very emergency I'd faced, so perhaps it didn't matter.

With 5 gallons of very expensive gas in the tank, I stopped the pump and sprinted toward the Grand Canyon, knowing I'd probably get there last. **Miguel Cortina**

It's Not Crazy if It Works

I have made a terrible mistake.

I was confident about Plan A. The magnitude of that hubris was not lost on me as I bet the farm on Plan D.

Plan A should've taken me all the way to the finish line without refueling. An EPA-estimated range of 550 miles, just enough to meet Google's estimated length of our route, was a major factor in my choice of the Honda Insight. All I had to do was beat the EPA's highway fuel economy rating by a fraction of a percent, and I'd make it. Beating EPA numbers is harder to do the higher they are—percentage gains don't reflect marked mpg improvements—but it's not impossible.

My seemingly ridiculous plan to minimize power drain on the Insight by plugging my phone into a 1,000-mA-hr battery pack and a Bluetooth speaker, rather than use the onboard USB port and stereo, felt like a stroke of genius. So did purposely dehydrating myself that morning before getting in the car so I wouldn't have to stop to use the bathroom. *[An army may travel on its stomach, but someone still has to dig the latrines.—Ed]*

It helps, though, if your route accounts for altitude and weather. Considering the lengths I went to to plan alternate avenues and engineer tricks for reducing fuel consumption, you'd think that changing road conditions would've occurred to me. But beyond my long-held knowledge that imposing mountain passes separate L.A. and Vegas, I didn't give it much thought.

That's how I ended up 70 miles from the finish line and 20 miles away from the next gas station, sucking fumes while my instrument cluster flashed an estimated 18 miles to empty.

Plan B had been to top off in Williams, the turn-off from the interstate to the Grand Canyon. Fuel is significantly cheaper there than at our finish line, a station in Tusayan just outside the park gates. In the 70-mile stretch between gas stations east of Kingman, though, it became obvious Plan B was off the table. That left me with Plan C, Seligman, the first gas east of Kingman; or Plan D, pushing the limit by aiming another 20 miles down the road to the cheaper gas in Ash Fork.

I placed my bet on Plan D as I approached the Seligman exit and eyeballed the posted gas prices. More than $3.80 a gallon, at least a buck more than in Kingman and Williams. Made sense, this being the last major opportunity to fill up going west and the first going east. I was sure I'd made the best strategic decision when I passed Miguel and his Ioniq parked at the Seligman gas station. Sucker.

With the Honda's 10-bar gas gauge still showing a single bar, I wagered I could make the 2-mile difference on the trickle of electrons remaining in the hybrid battery if I absolutely had to.

Christian was an afterthought by this point. His Fusion Hybrid wasn't getting anywhere near the mileage I was, and I knew he'd already stopped in Kingman to fill up. He was out of the game, as his pathetic after-the-fact campaign to change the rules would demonstrate. Miguel, though, had been reporting miracle fuel economy from his trip computer over the walkie—way better than EPA. Mine was showing considerably worse than EPA, but I was still on the road, crawling along, and he was filling up.

With my eyes keeping watch over the worsening road conditions, a Ford cop car went blurring by: Christian in his Fusion, going at least 80. He should've been running the lights and sirens.

Shackled to my decision, I tried to focus on a back episode of the *How Did This Get Made?* podcast to distract myself from the fuel gauge.

It's not like there was much else I could

Our cars are new, and the math to determine a winner has also been updated from 1950.

An unplanned fuel stop forces a change of plans for Scott.

do at that point. I'd left the climate control off the entire drive to save energy. The rain and snow had forced me to use the headlights and wipers, but I turned off each whenever it was safe. All of the standard active safety systems were already off to save power, and if I could have turned off the infotainment screen, too, I would've. All that was left was my feather-footed driving and confidence in my prior experience road tripping a pure-electric car.

The glowing sign standing watch over the snowy, nearly deserted gas station at Ash Fork was the most beautiful thing I'd seen in 500 miles: $2.52 a gallon. I leaped out of the car, whipped out my credit card, and filled that little Honda right to the gas cap like I had before I left.

Yes, I know, you're not supposed to overfill because it can damage the emissions system. But dammit, I had a race to win, and gas was a dollar a gallon more at the finish line. Back in the car, I laid into the throttle getting back up to highway speeds, desperate to stay ahead of Miguel. I'd made it to Vegas in less time than he had, and I didn't want him closing the gap in the final miles. My tactic would use more gas, but I'd paid a lot less for it.

Spotting Christian's Fusion at the finish line, its police markings somehow still covered in a haphazard application of gaffer's tape after 550 miles of rain and

So how did we do compared to the original fuel run? 70 years makes a major difference

In planning our homage to the original "Mobilgas Grand Canyon Economy Run" story, published way back in 1950, we made an early decision to not use the rules our forebears set. Time is money, so our winning driver would be the one who spent the least amount of money on gas and the least amount of time on the road.

But what if we'd followed the old rules?

In the original fuel economy run, we used a "ton-mpg" figure designed to level the playing field between big and small cars. "To provide a basis of comparison for all cars," we wrote, "a ton-mpg figure was chosen instead of vehicle mpg, for with the latter method, a heavy car with good fuel economy for the particular engine could not compare favorably with a light car of equally good fuel economy. The added weight of the heavy car would drop its economy."

Ton-mpg sounds complicated, but it's actually pretty simple: It's the weight of the car and passengers in tons, multiplied by miles driven, divided by gallons of gasoline consumed. The top three finishers of the 1950 run were

a Mercury V-8, a Cadillac 60 Special, and a Cadillac 62. The winning Mercury netted 61.27 ton-mpg and 26.52 mpg; the Cadillac 60 came in with 59.12 ton-mpg and 22.08 mpg; and the Cadillac 62 got 58.57 ton-mpg and 22.53 mpg.

So how did we do? Well, perhaps not surprisingly considering the fuel spill (which has to count toward gallons consumed), the Police Responder Hybrid finished last, achieving 65.44 ton-mpg and 33.35 mpg. Consider both of those numbers to have a big, fat asterisk—without the spill, we'd guess the Ford scored around 71 ton-mpg and about 35 mpg. In second place, the Ioniq Blue scored 78.26 ton-mpg and averaged 49.39 mpg. And despite the time discrepancy when playing under our new rules, the Insight still would have won under the old ones; it achieved 82.83 ton-mpg and netted 52.09 mpg.

Christian Seabaugh

The Insight might look like a Civic, but there's no denying its extraordinarily efficiency.

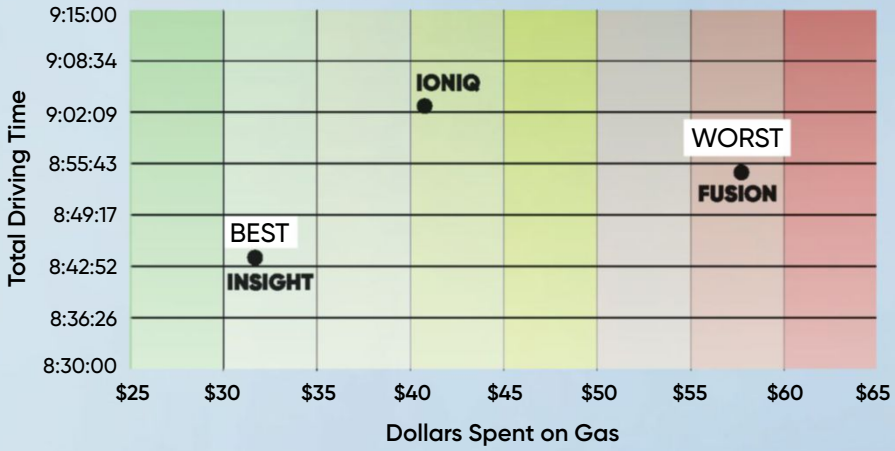
The Grand Canyon was socked in by snow and fog by the time we arrived.

snow, was no surprise. Over the walkies, he'd become increasingly obsessed with getting there first even though that part of the equation didn't matter. I didn't even try to contain my excitement when the fuel pump at our finish-line fill-up clicked off after three-tenths of a gallon. A few minutes later, Miguel rolled in, still clinging to the hope he'd used less gas than me so it would offset what he'd spent on it.

It didn't. At 8:46.32 on the stopwatch, I'd spent 15 fewer minutes behind the wheel than the other two *[Seems suspicious, but Scott claims he left L.A. a bit later than the others.—Ed]* and spent just $31.83 on gas, 10 bucks less than Miguel.

Therefore, we can confidently say, in our best 1950s pseudo-science documentary voice: If you want to get to your destination quickly while spending as little as possible on gas, get yourself a Honda Insight (and a backup battery, a Bluetooth speaker, a sweater, and a wicked case of dry mouth). **Scott Evans** ■

Driving Time vs. Dollars Spent



CHRISTIAN BECAME OBSESSED WITH GETTING THERE FIRST. MIGUEL CLUNG TO THE HOPE OF USING LESS FUEL. NEITHER MATTERED IN THE END.

Scott, Christian, and Miguel look happy, but they're still arguing over the results six months later.

POWERTRAIN/CHASSIS	2019 Ford Police Responder Hybrid (Fusion)	2019 Honda Insight EX	2019 Hyundai Ioniq Hybrid Blue
DRIVETRAIN LAYOUT	Front-engine, FWD	Front-engine, FWD	Front-engine, FWD
ENGINE TYPE	Atkinson cycle I-4, alum block/ head, plus permanent-magnet AC-synchronous electric motor	Atkinson cycle I-4, alum block/ head, plus permanent-magnet AC-synchronous electric motor	Atkinson cycle I-4, alum block/head, plus permanent-magnet AC-synchronous electric motor
VALVETRAIN	DOHC, 4 valves/cyl	DOHC, 4 valves/cyl	DOHC, 4 valves/cyl
DISPLACEMENT	121.9 cu in/1,998cc	91.4 cu in/1,498cc	96.4 cu in/1,580cc
COMPRESSION RATIO	12.3:1	13.5:1	13.0:1
POWER (SAE NET)	141 hp @ 6,000 rpm (gas), plus 88 hp (elec); 188 hp comb	107 hp @ 6,000 rpm (gas), plus 129 hp (elec); 152 hp comb	104 hp @ 5,700 rpm (gas), plus 43 hp (elec); 139 hp comb
TORQUE (SAE NET)	129 lb-ft @ 4,000 rpm (gas), plus 177 lb-ft (elec)	99 lb-ft @ 5,000 rpm (gas), plus 197 lb-ft (elec)	109 lb-ft @ 4,000 rpm (gas), plus 125 lb-ft (elec)
REDLINE	Not indicated	6,600 rpm	5,500 rpm
WEIGHT TO POWER	19.9 lb/hp	19.7 lb/hp	21.4 lb/hp
TRANSMISSION	Cont variable auto	1-speed automatic	6-speed twin-clutch auto
AXLE/FINAL DRIVE RATIO	2.57:1/not available	3.42:1/8.39:1 (elec), 2.75:1 (gas)	4.19:1 (1st-4th), 3.05:1 (5th-6th, R)/2.34:1
SUSPENSION, FRONT; REAR	Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar	Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar	Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar
STEERING RATIO	14.8:1	12.6:1	13.9:1
TURNS LOCK TO LOCK	2.7	2.5	2.7
BRAKES, F; R	12.4-in vented disc; 12.4-in disc, ABS	11.1-in vented disc; 10.2-in disc, ABS	11.0-in vented disc; 10.3-in disc, ABS
WHEELS	7.5 x 17-in steel	7.0 x 16-in, cast aluminum	6.0 x 15-in cast aluminum
TIRES	235/50R17 96W (M+S) Goodyear Eagle Sport	215/55R16 93V (M+S) Michelin Energy Saver A/S	195/65R15 91H (M+S) Michelin Energy Saver A/S
DIMENSIONS			
WHEELBASE	112.2 in	106.3 in	106.3 in
TRACK, F/R	62.3/62.0 in	60.9/61.6 in	61.5/62.1 in
LENGTH X WIDTH X HEIGHT	191.8 x 72.9 x 58.0 in	183.6 x 71.6 x 55.6 in	176.0 x 71.7 x 56.9 in
TURNING CIRCLE	37.6 ft	35.7 ft	34.8 ft
CURB WEIGHT	3,735 lb	2,992 lb	2,977 lb
WEIGHT DIST, F/R	58/42%	61/39%	61/39%
SEATING CAPACITY	5	5	5
HEADROOM, F/R	39.2/37.8 in	39.3/36.9 in	39.1/37.4 in
LEGROOM, F/R	44.3/38.3 in	42.3/37.4 in	42.2/35.7 in
SHOULDER ROOM, F/R	57.8/56.9 in	56.9/55.0 in	56.1/55.0 in
CARGO VOLUME	12.0 cu ft	15.1 cu ft	26.5 cu ft
TEST DATA			
ACCELERATION TO MPH			
0-30	3.0 sec	2.6 sec	2.8 sec
0-40	4.5	3.7	4.2
0-50	6.2	5.3	6.2
0-60	8.2	7.3	8.4
0-70	10.7	9.8	11.0
0-80	13.5	13.5	14.7
0-90	17.1	18.9	–
0-100	21.2	–	–
PASSING, 45-65 MPH	4.1	4.0	4.5
QUARTER MILE	16.3 sec @ 88.0 mph	15.8 sec @ 84.6 mph	16.4 sec @ 84.3 mph
BRAKING, 60-0 MPH	118 ft	122 ft	129 ft
LATERAL ACCELERATION	0.85 g (avg)	0.87 g (avg)	0.81 g (avg)
MT FIGURE EIGHT	27.4 sec @ 0.63 g (avg)	27.5 sec @ 0.63 g (avg)	27.9 sec @ 0.60 g (avg)
TOP-GEAR REVS @ 60 MPH	N/A	6,950 rpm (elec); 2,300 rpm (gas)	2,000 rpm
CONSUMER INFO			
BASE PRICE	$31,030	$25,080	$23,320
PRICE AS TESTED	$36,941	$25,080	$23,455
STABILITY/TRACTION CONTROL	Yes/Yes	Yes/Yes	Yes/Yes
AIRBAGS	8: Dual front, front side, f/r curtain, front knee	6: Dual front, front side, f/r curtain	7: Dual front, front side, f/r curtain, driver knee
BASIC WARRANTY	3 years/36,000 miles	3 years/36,000 miles	5 years/60,000 miles
POWERTRAIN WARRANTY	5 years/60,000 miles (8 years/100,000 miles hybrid + battery systems)	5 years/60,000 miles (8 years/100,000 miles hybrid + battery systems)	10 years/100,000 miles (10 years/ Unlimited miles hybrid + battery systems)
ROADSIDE ASSISTANCE	5 years/60,000 miles	3 years/36,000 miles	5 years/Unlimited miles
FUEL CAPACITY	14.0 gal + 1.40 kW-hr lithium-ion battery	10.6 gal + 1.22 kW-hr lithium-ion battery	11.9 gal + 1.56 kW-hr lithium-ion battery
REAL MPG, CITY/HWY/COMB	42.2/42.2/42.2 mpg	60.0/50.1/55.1 mpg	63.7/54.3/59.1 mpg
EPA CITY/HWY/COMB ECON	40/36/38 mpg	55/49/52 mpg	57/59/58 mpg
ENERGY CONS, CITY/HWY	84/94 kW-hr/100 miles	61/69 kW-hr/100 miles	59/57 kW-hr/100 miles
CO2 EMISSIONS, COMB	0.51 lb/mile	0.37 lb/mile	0.34 lb/mile
RECOMMENDED FUEL	Unleaded regular	Unleaded regular	Unleaded regular

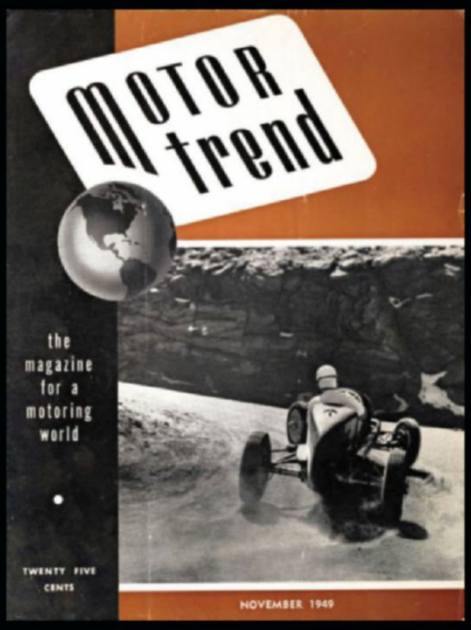
EQUA REAL MPG

70 MOTORTREND 1949-2019

OUR FAVORITE *MOTORTREND* COVERS

FROM THE PAST 70 YEARS

One of the greatest parts of the magazine industry is immersing yourself in the back catalog of old issues and seeing how the world has changed with time. Not surprisingly, our covers have reflected the decades they were born into: In the '50s, the covers of *MotorTrend* were beautifully sketched and simply done, whereas in the '80s we shifted to a big, splashy, and bold aesthetic, often featuring models and props. In celebration of 70 years, we went through our archives and selected our favorites. **Christian Seabaugh**



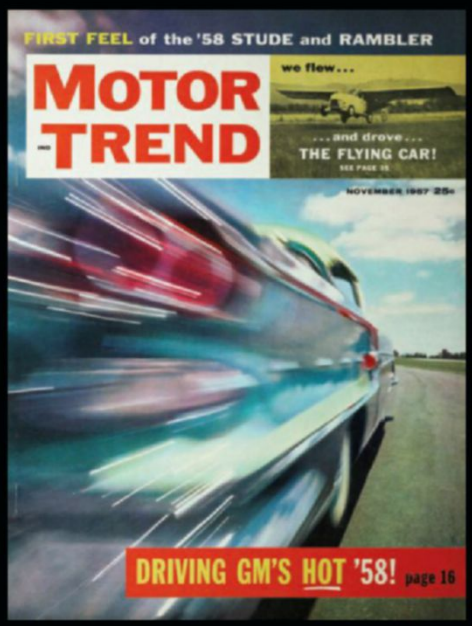
November 1949: Untitled
There's a fabulous sense of speed in this shot; the car almost looks like it's bending around the corner. You can see the rear end starting to slide on a loose surface, the driver leaning into the corner, the front wheels cranked over to hopefully make it around that slippery, high-risk corner. Plus, the old *Motor Trend* logo is undeniably rad. **Duncan Brady**

June 1950:
What Is the Future Trend in Sports Cars?
One of our earliest covers is among the most effective, and it set a tone many others would follow. Despite its relative simplicity, it instantly captured my interest. No need for catchy headlines or splashy colors—the image of a car sliding across the desert floor represents pure, unadulterated motoring thrill. It says, "If this looks fun, you'll like what's inside this magazine." **Alex Leanse**

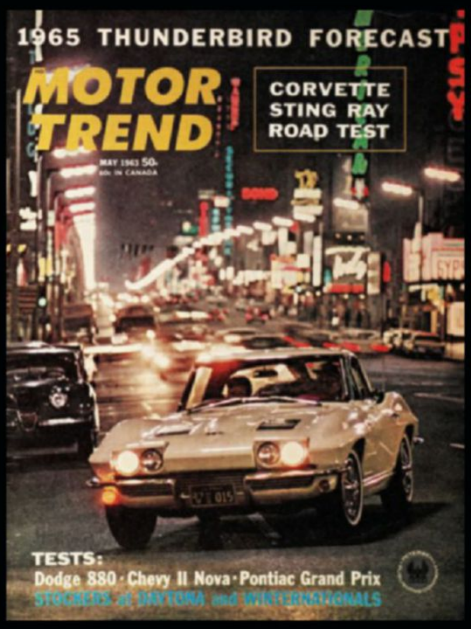
April 1951: Tomorrow's Atom Car!
Our predecessors found a crackpot professor who was "telling his automotive students that within their lifetimes there will be atomic energy to contend with as a motive force for personal transportation." Atomic Energy Commission member George Granger Brown found the notion pretty far-fetched, given that such a car "would be around 20 by 40 feet in size and weigh many tons." **Frank Markus**

May 1951: The Fabulous Bugatti Atlantique
The car is one of the most incredible of all time. I'm guessing this is Ralph Lauren's car, and the original red is now buried under 70 coats of black on black. Then you have the lovely Pacific Ocean, the photo likely shot in Pacific Palisades looking toward Santa Monica. The clincher, though, is a man's arm coming out of the driver-side window and lighting the woman's cigarette! Times have changed, that's for sure! **Jonny Lieberman**

October 1952: Unique Cars for Sportsmen
This issue is the first to feature a Jeep on the cover—and I don't think the Jeep brand could have asked for a better *MT* debut. The illustration of the Willys Jeep perfectly communicates the vehicle's adventurous spirit, which lives on in its modern descendant, the Jeep Wrangler. The cover shows that four-wheeling (or six-wheeling, as shown here) has always been—and hopefully always will be—an important trend for us to follow. **Alex Nishimoto**



November 1957: Driving GM's Hot '58!
My idea of a magazine cover is that it should arouse interest, capture imagination, and inspire flights of fantasy. Many times, these images are overproduced to the point of appearing to be advertisements. This cover instead uses the Ernst Haas method of blur-motion photography to provoke heart-pumping emotion with the speeding Pontiac. Evidently, the idea was ahead of its time, because we didn't use a blur-motion cover shot again for seven more years. **Mark Rechtin**

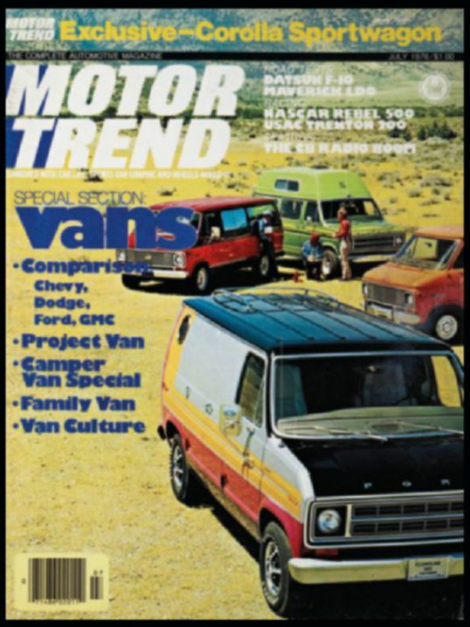


May 1963: Corvette Stingray Road Test
Clean, simple, and relatable, this cover is a snapshot in time. Even if you weren't alive then, it instantly transports you to a street corner as you stop to gawk at the new Corvette Stingray rumbling by. Minimal cover lines, no inset photos of other cars, it's the first golden era of cars caught in the act. **Scott Evans**

February 1965: Car of the Year
My favorite cover announces the entire Pontiac line as the Car of the Year. Favorite because the '65 Pontiacs were some of the best-looking cars to come out of Detroit. Also, the lighting and overall feel reminds me of those great print ads that made cars look so elegant. Lastly, it's a simple cover that lets the cars speak for themselves. As a bonus, the COTY award looks space age. **Rusty Kurtz**

April 1967: Sex ... and the Single Car!
What's not to love? The "Sex ... and the Single Car!" banner above a desmodromic V-8 with four double-barrel carbs and a bundle of snaking headers, the featured Shelby GT-500 vs. 427 Sting Ray comparison, and that we used to sponsor the Motor Trend Riverside 500 race—all amazing. Also, the cover price is in U.S. dollars (cents, actually, 50 of them), whatever "UK 3'6" is, and the inscrutable Swedish KR. 3.90 Inkl. oms! **Chris Walton**

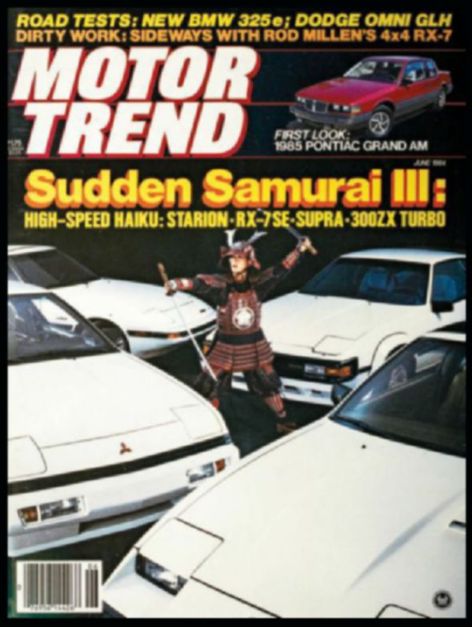
January 1970:
Dan Gurney Goes to Plymouth—Why?
I like this cover because it's graphically very clever. It's an art director's cover, before editors and publishers get involved telling you it's ridiculous to have Dan Gurney sitting on the wing. Pure graphic design. Herb Lubalin would have approved. **Alan Muir**



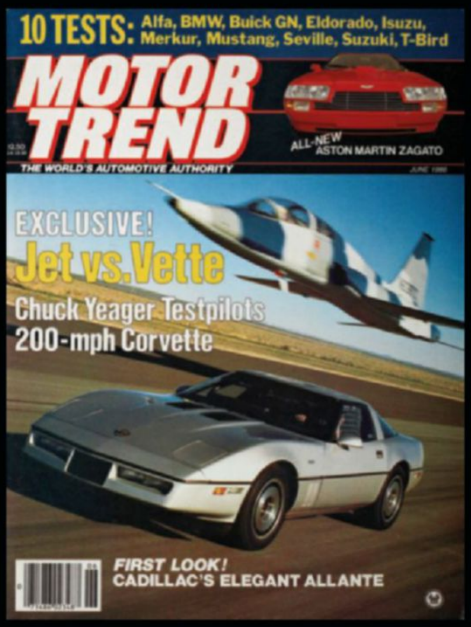
July 1976: Vans
Because this issue coincided with our country's 200th birthday, you might have thought we'd put a red, white, and blue Mustang on the cover to celebrate. Instead, we put four vans on the cover, which I'd say is infinitely cooler.
Collin Woodard

March 1983: Corvette: A Star Is Born
This works on many layers and is as relevant today as it was in 1983. Sure, the C4 was maligned, but there's no denying each new generation of Corvette is of cosmic proportion, as evidenced by the hype surrounding the mid-engine Corvette. Ironically, *A Star Is Born* has also become somewhat iconic with each remake of the 1937 original. The cover is as clever as it is cheesy. **Alisa Priddle**

May 1984: Porsche 911 Carrera
Why? Because I believe it's the first time a David Kimble cutaway illustration appeared on the cover of *MT*. Kimble's hand-drawn (!) works of art are the stuff of legend, and I've run into them throughout my career, first in the halls of the *Road & Track* building in Newport Beach, where I spent a year, and then in *MT*'s offices on Wilshire Boulevard. Cars like the 930 are the stuff of automotive dreams, which makes it even weirder that I now own one. **Ed Loh**

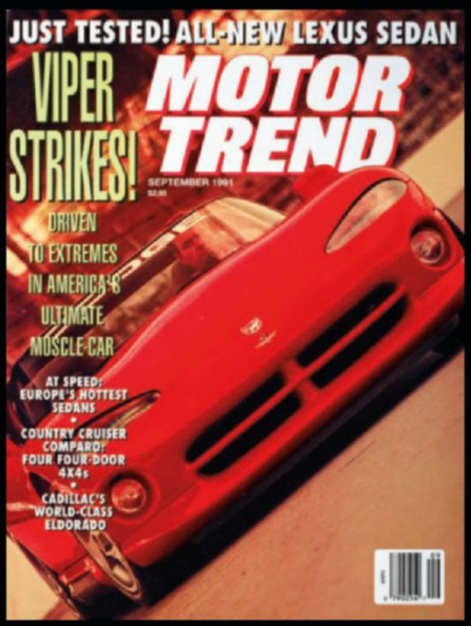


June 1984: Sudden Samurai III
Simply captivating. Will that samurai survive this photo shoot without slicing the Supra or Starion? I can't look away. **Erick Ayapana**



June 1986: Jet vs. Vette
Jet vs. 'Vette is my favorite cover for that incredible practical shot of the car and plane. As a photographer, that's a once-in-a-lifetime opportunity to shoot, but as a consumer it would definitely be something I'd want to pick up and read. **Brandon Lim**

October 1986: Countach Races Chopper
I burned an immense amount of time reading car mags as a kid, and the more I read, the more it became clear that working for one might be the most fun any adult could have. When I first laid eyes on this cover of Bob Bondurant's 1973 French Aerospatiale SA 341 G Gazelle hovering a few feet above a Lamborghini Countach at Sears Point Raceway, I decided I needed to go to college. **Brian Vance**



September 1991: Viper Strikes!
The first-gen Viper kick-started my addiction to cars. As a small-town kid from the Philippines, I would dream about driving one in the streets of my hometown and racing up the roads to the next village in a red Viper RT 10 just like this one. Whenever I played a racing game, the first car I would look for was the Vipe. It didn't have to be a specific one; as long as it was a Viper, I was a happy camper. **Stefan Ogbac**

August 1997: Xtreme Fun!
This is one of the most unexpected covers we've ever published. **Kelly Pleskot**

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Customer Rating

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- 9800 cu. in. of storage
- 1000 lb. capacity
- Weighs 174 lbs.

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COMPARE TO SNAP-ON $1,750 MODEL: KRA4008FPBO

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- Super-Strong, Ultra-Lightweight Composite Plastic
- Magnetic Base & 360° Swivel Hook for Hands-Free Operation
- 3 - AAA Batteries (included)
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Customer Rating

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- Weighs 34 lbs.

SAVE $91 NOW $59.99 ~~$79.99~~

COMPARE TO K TOOL $151.42 MODEL: KTI63094

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HaulMaster — SUPER COUPON

72" x 80" MOVING BLANKET

Customer Rating

NOW $5.99 ~~$9.99~~

COMPARE TO BLUE HAWK $19.99 MODEL: 77280

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YOUR CHOICE $39.99 ~~$59.99~~

HOT DOG ITEM 69269 97080 shown

PANCAKE ITEM 61615/60637 95275 shown

- Air delivery: 0.6 CFM @ 90 PSI

Customer Rating

COMPARE TO PORTER-CABLE $98.62 MODEL: PCFP02003

SAVE 59%

33964415

LIMIT 3 - Coupon valid through 11/26/19*

COVERPRO — SUPER COUPON

10 FT. x 20 FT. PORTABLE CAR CANOPY

Customer Rating

SAVE $99 NOW $99.99 ~~$119.99~~

COMPARE TO SHELTER LOGIC $199 MODEL: 23522

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HARDY — SUPER COUPON

MECHANIC'S GLOVES

Customer Rating

AVAIL. IN SM, MED, LG, XL, XXL

~~$5.99~~ NOW $4.99

COMPARE TO VALEO $14.99 MODEL: 25521

SAVE 66%

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33968798

LIMIT 5 - Coupon valid through 11/26/19*

PITTSBURGH AUTOMOTIVE — SUPER COUPON

1 TON CAPACITY FOLDABLE SHOP CRANE

Customer Rating

- Boom extends from 36-1/4" to 50-1/4"
- Crane height adjusts from 82" to 94"

NOW $139.99 ~~$189.99~~

COMPARE TO IRONTON $249.99 MODEL: 46218

SAVE $110

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CEN-TECH — SUPER COUPON

2/10/50 AMP, 12 VOLT BATTERY CHARGER AND ENGINE STARTER

Customer Rating

SAVE 49% ~~$52.99~~ NOW $29.99

COMPARE TO SCHUMACHER ELECTRIC $59.77 MODEL: SE-1250

ITEM 60581 3418/66783/60653 shown

33985693

LIMIT 3 - Coupon valid through 11/26/19*

drill master — SUPER COUPON

4-1/2" ANGLE GRINDER

Customer Rating

SAVE 44% ~~$14.99~~ NOW $9.99

COMPARE TO PERFORMAX $17.99 MODEL: 2411-1

ITEM 69645/60625 shown

33986252

LIMIT 5 - Coupon valid through 11/26/19*

ZURICH — SUPER COUPON

OBD2 CODE READER WITH ABS/SRS/FixAssist® ZR13

Customer Rating

NOW $179.99 ~~$199.99~~

SAVE $158

COMPARE TO Snap-on BLUE-POINT $338 MODEL: EECR3A

ITEM 63806

33986617

LIMIT 1 - Coupon valid through 11/26/19*

EARTHQUAKE XT — SUPER COUPON

20 VOLT LITHIUM CORDLESS EXTREME TORQUE 1/2" IMPACT WRENCH KIT

Customer Rating

- 4.0 amp hour battery

1200 TORQUE FT. LBS. BOLT BREAKAWAY

SAVE $484

NOW $239.99 ~~$269.99~~

COMPARE TO SNAP-ON $724.85 MODEL: CT8850PDB, CTB8185BK, CTC720

ITEM 63537/64195/63852 shown

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LIMIT 1 - Coupon valid through 11/26/19*

BRAUN — SUPER COUPON

390 LUMENS MAGNETIC SLIM BAR LED WORK LIGHT

Customer Rating

NOW $24.99 ~~$39.99~~

COMPARE TO ASTRO $55.12 MODEL: 40SL

SAVE 54%

ITEM 56248/56329/63958 shown

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LIMIT 2 - Coupon valid through 11/26/19*

PREDATOR — SUPER COUPON

8750 MAX. STARTING/ 7000 RUNNING WATTS 13 HP (420 CC) GAS GENERATOR

Customer Rating

ITEM 63086/68530 56169/56171/63085 shown

ITEM 68525/63088 56168/56170/63087 CALIFORNIA ONLY

SAVE $2,139

COMPARE TO HONDA $2,669 MODEL: EB6500X1AT

- GFCI outlets

SUPER QUIET

Wheel kit and battery sold separately.

NOW $529.99 ~~$599.99~~

34000196

LIMIT 1 - Coupon valid through 11/26/19*

BRAUN — SUPER COUPON

5000 LUMENS LED HANGING SHOP LIGHT

Customer Rating

NOW $19.99 ~~$29.99~~

ITEM 64410

SAVE 57%

COMPARE TO INOLED $47 MODEL: SNT28B-12

34000865

LIMIT 3 - Coupon valid through 11/26/19*

HaulMaster — SUPER COUPON

18" WORKING PLATFORM STEP STOOL

Customer Rating

- 350 lb. capacity

NOW $19.99 ~~$29.99~~

COMPARE TO GPL $51.45 MODEL: H-21

SAVE 61%

ITEM 62515/66911 shown

34009271

LIMIT 3 - Coupon valid through 11/26/19*

BADLAND ZXR — SUPER COUPON

12,000 LB. TRUCK/SUV WINCH

- Weighs 83.65 lbs.
- 21" L x 10-1/8" H

SAVE $421

COMPARE TO WARN $720.99 MODEL: 96820

Customer Rating

~~$399.99~~ NOW $299.99

ITEM 64045/64046/63770 shown

34012381

LIMIT 1 - Coupon valid through 11/26/19*

PITTSBURGH PRO — SUPER COUPON

1/2" DRIVE 25" BREAKER BAR

Customer Rating

- Chrome vanadium steel construction
- Head swivels 180°
- Polished finish

LIFETIME WARRANTY

~~$13.99~~ NOW $8.99

COMPARE TO DURALAST $23.99 MODEL: 72-121

SAVE 62%

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August 2005: Bullitt The Rematch
Choosing my favorite cover is tough: Between November 2004 and February 2012 I was responsible for 88 of them, deciding the subject, approving the imagery, and writing every single blurb. But if I had to choose one, it would be this one. Art director Andy Foster and photographer Evan Klein together created this wonderful homage to one of the greatest automotive movie moments of all time. **Angus MacKenzie**

March 2012: ZL1 Tells Boss: Shove It!
Camaro vs. Mustang—is there a better rivalry? This issue features two enthusiast favorites but warrants a closer look. The bright red Camaro does a burnout, and at the bottom is the best part of the headline: "Turn to page 36 to see how far." Examine it closer still, and you'll see why I love what *MT* stands for. It's not just high-performance sports cars; we also test cars like the Honda CR-V and Chevy Malibu. **Zach Gale**

December 2015: You Again
This pick is a selfish one, but one of my favorite covers of all time is our December 2015 issue. Sure, it being my first full cover story might have something to do with my pick, but beyond that, the words "You Again" backdropped by matching yellow pony cars sums up in two words the everlasting battle the Ford Mustang and Chevrolet Camaro have been locked in since the late '60s. **Christian Seabaugh**

June 2016: Apple Car
Everything that went on behind the scenes to get this cover done was tremendous. Kim Reynolds did excellent research on what the Apple Car could look like. When we teased the cover the day before its release, CNBC gathered a panel on what this could mean for Apple, and Univision did an animation of the car inside and outside using the renders we created. If that's not tremendous, then what is it? **Miguel Cortina**

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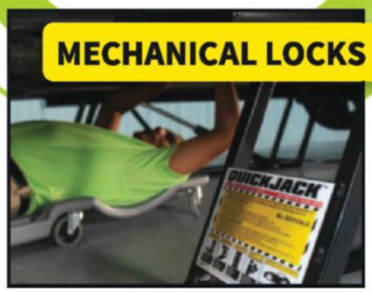

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WHAT IS AVAXHOME?

Updates on our long-term fleet

MT GARAGE

ARRIVAL: 2019 Jeep Wrangler Unlimited Rubicon

EPA CITY/HWY/COMB Fuel Econ: 22/24/22 mpg

"Speccing our long-term Wrangler involved quite a bit of arguing among the staff. I won." Christian Seabaugh

Base price $43,040 **As tested** $57,110

Never has ordering a new long-termer been more difficult than it was with our new 2019 Jeep Wrangler Unlimited Rubicon.

The process is supposed to be pretty simple, especially if the car is a recent award winner like the Wrangler—our 2019 SUV of the Year. In these cases, soon after the award has been announced, we'll place an order for a long-termer in a feature-rich spec with the latest technologies so we can act as the canary in the coal mine, so to speak, for our readers. However, ordering a Wrangler isn't as simple as deciding which new features to get.

The first argument started innocently enough, with associate road test editor Erick Ayapana, who's responsible for managing all of our test cars, asking what trim levels we wanted: Sport, Sport S, Sahara, Rubicon, or the Moab special edition. It quickly devolved from there. Some argued for a bare-bones two-door Wrangler Sport. Others wanted a well-optioned Wrangler Rubicon soft top. Some pushed for a Wrangler Unlimited Sahara with the new power roof. Smart people, such as myself, fought in favor of a Wrangler Unlimited Rubicon.

Eventually, we compromised on a four-door Wrangler Unlimited equipped with the new mild hybrid eTorque 2.0-liter turbocharged I-4, which makes 270 hp and 295 lb-ft of torque, and its eight-speed automatic transmission. We let our social media followers decide the trim level. You guys picked the Rubicon. Thanks for making the right choice.

The choice of top, however, was given to its chaperone, and through timing and luck, I scored the keys to our new Wrangler Unlimited Rubicon, optioned with the new, easily removable hardtop.

I have to admit, I'm more than a little pleased that I get to be our new Wrangler's chaperone. After spending a year with the 2018 Ram 2500 Power Wagon (the final verdict is coming in the upcoming months), I'm quite happy you guys voted for the Wrangler Rubicon. We don't need to spend a year with it to say it's among the best factory off-roaders in the world, and given my penchant for exploring our country's great outdoors, it's right up my alley.

So many of the features we love on the new Wrangler are on the base model. The doors come off easier, the roof is simpler to operate or remove, the windshield folds down, and it has four-wheel drive and a well-finished interior.

There wasn't much to add, as the Unlimited's standard feature list is long. Functional features include unique bumpers and fender flares, 33-inch off-road tires, heavy-duty Dana 44 axles, locking front and rear differentials, an electronically disconnecting anti-roll bar, unique suspension components, body

Less is more. The Jeep sheds its skin and heads to the beach.

This is just confusing/awesome to look at.

armor, and much more. It also gets a standard Apple CarPlay–friendly 7.0-inch touchscreen, a digital display on the instrument cluster, and automatic air conditioning, among other things.

Nevertheless, we went a bit nuts with the configurator. Aside from the black Freedom Top hardtop ($1,195) and eTorque engine and eight-speed auto (effectively $3,000, as you can't get the four-cylinder with the standard six-speed manual), we loaded our Wrangler up with leather upholstery ($1,495), the trailer towing package ($795), LED lighting ($995), an upgraded 8.4-inch infotainment screen with a premium nine-speaker Alpine audio system ($1,595), blind-spot monitors with rear parking sensors ($895), adaptive cruise control with forward collision warning ($795), steel winch-capable front and rear bumpers ($1,295), hardtop headliners ($525), body-color fender flares ($495), and remote start ($495). We ended up tacking an eye-watering $14,070 onto our Jeep's $43,040 starting price, for a total of $57,110.

With so many features new to the Wrangler lineup this year, I'm excited to see if our 2019 Wrangler Rubicon can prove itself more than a weekend expedition toy.

2019 Jeep Wrangler Unlimited Rubicon 4x4
Vehicle Layout Front-engine, 4WD, 5-pass, 4-door SUV
Engine 2.0L/270-hp/295-lb-ft turbo DOHC 16-valve I-4
Transmission 8-speed automatic **Curb Weight** 4,800 lb (*MT* est)
Wheelbase 118.1 in **0-60 MPH** 8.0 sec (*MT* est) **Energy Cons, City/Hwy** 153/140 kW-hr/100 miles **CO2 Emissions, Comb** 0.85 lb/mile

PAUL LAGUETTE

2019 Infiniti QX50

Service life:
7 mo/13,072 mi • Avg. Fuel Econ: 20.3 mpg

"Infiniti's infotainment system has driven me to use a magnetic phone mount and Waze." **Collin Woodard**

Avg CO2 0.96 lb/mi **Energy cons** 169 kW-hr/100 mi
Unresolved problems None **Maintenance cost** $106.21 (oil change, inspection, tire rotation) **Normal-wear cost** $0
Base price $46,145 **As-tested** $59,085 **EPA City/Hwy/Comb Fuel Econ** 24/30/26 mpg **Real MPG** 20.7/29.9/24.1 mpg

In his second update of the 2018 Infiniti Q60, managing art director Mike Royer complained that Infiniti's infotainment system feels like it's a generation behind. After several months behind the wheel of the QX50, I'd say that's an understatement. When I plug my phone in, for example, the Infiniti recognizes it as an iPod. When was the last time someone under 40 used an iPod?

If the system worked well, though, it would be less of a problem. I'd still complain about the dated graphics and lack of Apple CarPlay, but I wouldn't use words such as "embarrassing" when I did. Unfortunately, it's unreliable.

Sometimes the Bluetooth stays paired. Sometimes it doesn't. Sometimes I can play music off my phone. Sometimes I can't. The unpredictability is frustrating. And remember that part about the it thinking phones are iPods? Well, when you don't have any music saved to iTunes, it has no idea what to do.

Even more frustrating is that the software is incredibly buggy. And because Infiniti's service department couldn't find anything wrong when I took it in, I can only assume there's an issue with the software itself.

Over the past several months, I've had to deal with the navigation screen flickering, detecting phantom inputs, randomly rotating the map, and displaying confusing messages. The lower screen has been more reliable, but it's still crashed on me and given me at least one "Launcher has stopped unexpectedly" message.

With no solution in sight, it looks like I'm stuck with the QX50 the way it is. And if the dealer can't figure out what's wrong, we're really going to have a problem. On a near-$60,000 luxury vehicle, it's simply not acceptable to have so many problems.

2018 Ram 2500 Power Wagon

Service life:
10 mo/17,986 mi • Avg Fuel Econ: 10.9 mpg

"The Ram Power Wagon's winch is typically a last resort, but I'm happy to report it's a reliable one."
Christian Seabaugh

Avg CO2 1.78 lb/mi **Energy cons** 306 kW-hr/100 mi
Unresolved problems None **Maintenance cost** $97.17 (1-oil change, inspection, tire rotation) **Normal-wear cost** $0
Base price $53,245 **As-tested** $63,280 **EPA City/Hwy/Comb Fuel Econ** Not rated **Real MPG** 11.6/15.3/13.0 mpg

The heroic winch. Just add snow and Scott Evans, and we've got a rescue.

I have a confession to make: I've been a bit greedy with the keys to my long-term 2018 Ram 2500 Power Wagon. I adore the unstoppable, gas-guzzling beast, and not just out in California's back-country. Weirdly enough, I like it in Los Angeles traffic, too. People just don't seem to move out of my way with the same sense of urgency when I'm driving other vehicles.

At any rate, with fellow features editor Scott Evans and his lovely wife planning an expedition through Arizona over a long, cold weekend a few months back, I figured it was only right to relinquish the keys to the Power Wagon for a few days. Turns out, it was a good thing I did. What follows is Scott's report from the road:

"On a long weekend vacation out to Monument Valley and the Grand Canyon this winter, poor weather was to be expected. The South Rim sits at 6,800 feet and averages nearly 5 feet of snowfall annually. More than 6 inches of it fell just the night before.

"I figured it was only a matter of time before we found a car in a snowy ditch, but I was worried that when I did, there wouldn't be a good point to winch it from. For better or for worse, the vehicle we found in the ditch was an RV.

"We came across the Cruise America rental RV just south of the park entrance, nose down in a ditch on the east side of the road. I didn't ask how it got there, whether the driver hit the brakes and slid off to his right or just hit a patch of ice and the crown of the road took over. He and his adult family were from Southeast Asia—I didn't ask where, specifically—and spoke little English. Another family of good Samaritans had already stopped and provided chains to help the Ford E-Series van–based RV get traction on the icy road, but with the passenger-side rear wheel just off the edge of the pavement, the motor home was crab-walking itself down the road rather than backing out of the ditch.

"'My son said: Now that looks like a truck that could pull us out!' the helpful father said to me as he flagged me down. The spirit was certainly willing, but my brain was just a little uncertain the Power Wagon would be up to the task.

"Without consulting the internet, I figured the van that RV was built on would weigh around 4,000 pounds as a bare-chassis cab and could only support a few thousand pounds of payload. Best guess, the gross vehicle weight would be in the range of 10,000 pounds. The Power Wagon's winch is rated to 12,000 pounds, so there ought to be a cushion. Later research would suggest a curb weight around 11,000 pounds. Regardless, there was little worry of overheating the winch motor in 20-degree weather.

Testing out the winch in better conditions ...

"Thankfully, Cruise America RVs seem to all be fitted with trailer hitches, and although a sticker on the receiver mandated a trailer of no more than 2,500 pounds, that number is based on the RV's ability to pull and stop the combined weight of the vehicle and trailer. With even light-duty pickup trucks able to pull over 13,000 pounds off a receiver hitch these days, it stood to reason the hitch could take the weight of the RV, so that's where we attached the winch cable.

"I at first hoped to keep the southbound lane of Route 64 open to traffic while I winched the RV, but from that angle the motor home continued to crab along the ditch and the edge of the road rather than pull out. With the other family stopping traffic, my wife repositioned the truck and I reattached the winch. With the RV in reverse and the cable taut, it was time to put up or shut up.

"Progress was encouraging at first. Despite the snow and ice, the Power Wagon stood firm and pulled the RV toward it, not the other way around. The RV moved slowly back until the front wheels came up to the edge of the ditch. I held my breath as the winch slowed nearly to a stop, but the RV's front wheels popped up over the lip, and the motor home continued back until we had it on the pavement with enough room to turn and pull away safely without falling back in.

"Automakers naturally prefer we return their vehicles in the same condition we received them in (or as close as possible), which leaves us little opportunity to test features like a winch that only get used when all else fails. Lucky us, we could combine a real-world winch test with a good deed."

2018 Nissan Kicks

The Kicks doing its best to look heroic, as well.

"We took the Kicks to the test track, and spoiler alert: It isn't a race car."
Stefan Ogbac

Avg CO2 0.60 lb/mi **Energy cons** 105 kW-hr/100 mi **Unresolved problems** None
Maintenance cost $0 **Normal-wear cost** $0
Base price $21,635 **As-tested** $23,000
EPA City/Hwy/Comb Fuel Econ 31/36/33 mpg
Real MPG 28.7/39.8/32.8 mpg

EQUA REAL MPG

Service life: 3 mo/5,255 mi • Avg Fuel Econ: 32.3 mpg

Our long-term 2018 Nissan Kicks has finally settled in and exceeded its break-in period. With just over 5,000 miles on the odometer, it was time to give the keys to our test team to see what the Kicks can do when pushed to its rather modest limits.

The Kicks hit 60 mph in a sluggish 9.9 seconds and finished the quarter mile in 17.6 seconds at 78.2 mph, making it one of the slowest subcompact crossovers on sale. Only the Ford EcoSport with the 1.0-liter EcoBoost three-cylinder the and Toyota C-HR are slower. Stopping from 60 mph took 125 feet, which is longer than a number of rivals we recently tested, including the Honda HR-V, Toyota C-HR, and Mazda CX-3. Associate road test editor Erick Ayapana observed plenty of ABS chatter but commended the Kicks for stopping straight and having little front-end dive.

On the figure-eight course, road test editor Chris Walton liked the Kicks' neutral turn-in; however, it loses its composure midcorner, where he noted that the car "goes all gooey." The traction control intervenes by cutting power and doesn't appear to be undefeatable; it still works in the background even when you turn it "off." Despite the Kicks weighing in at 2,655 pounds, its 125-hp 1.6-liter I-4 doesn't have the power to go more than 60 mph on the figure-eight straightaways. Walton commented that he hardly needed to brake when entering a corner on the figure-eight.

Lessons learned from track testing: The 2018 Nissan Kicks is at its best navigating the urban jungle, cruising leisurely to your next destination. If you want your subcompact crossover to gleefully take on your favorite winding road and back up its sporting intentions, look to the Hyundai Kona and Mazda CX-3.

For the next update, we'll be taking the Kicks out on the open road to see how well it does on long drives and road trips. Stay tuned.

Having a go on the winding roads, but the Kicks' strength is in the city.

2019 Acura RDX

Service life:
4 mo/7,984 mi • Avg Fuel Econ: 19.6 mpg

"I still love the RDX's bolder styling, but it's taking a while to get used to those big blind spots." Zach Gale

Avg CO2 0.99 lb/mi **Energy cons** 169 kW-hr/100 mi
Unresolved problems None **Maintenance cost** $134.29 (1-oil change, inspection, tire rotation) **Normal-wear cost** $0
Base price $46,895 **As-tested** $46,895 **EPA City/Hwy/Comb Fuel Econ** 21/26/23 mpg **Real MPG** 19.4/30.9/23.3 mpg

Few luxury cars handle my soup as well as our long-term Acura RDX.

Driving performance is incredibly important, but entertaining daily drivers will fall short if they can't meet certain everyday tests—in my case, one is how well it handles a to-go container of soup. For its segment, the 2019 RDX is one of the best in interior space and functionality.

Whenever we visit our favorite Mediterranean restaurant, I leave with a decent-sized to-go container of creamy chicken with leek soup. Mmm. With the Acura, I don't need to force the container into the covered storage area between the driver and front passenger, put it on the floor, or use the cargo area, either. Our long-termer holds my soup snugly at the bottom of the center stack's storage area underneath the gearshift buttons. That open compartment is also where you'll find a second USB outlet (rear passengers get their own two USB outlets), a 12-volt outlet, and aux-in connectivity. Aside from holding soup, a small pizza box, or an occasional light sweatshirt, I don't use the space often. Still, every time I need somewhere to put something small, I'm glad I'm driving an RDX.

The Acura scores more points on my evening commute. The adaptive cruise control isn't as effective or as customizable as that of my last long-termer (a 2017 Audi A4), but our RDX's cupholders are truly versatile. Beside the two cupholders is a slim and open rectangular storage area with a USB outlet where you can charge your phone and store a wallet or some keys. To pass the time in Los Angeles rush-hour traffic, I eat carrots. With the rollable cover closed over the cupholders, my bag of boredom carrots sits conveniently on a high perch, with my charging phone and other small items out of sight underneath.

Another cool touch: The soft armrest at the back of the center console can be moved forward over the cupholders, helpful if you'd rather have a comfortable place to rest an elbow instead of a second cupholder. Although no one should rush to buy the RDX because its storage solutions are so helpful, I appreciate knowing I don't have to sacrifice versatility when upgrading to a luxury crossover.

The same is true with the RDX's back seat. The backrest doesn't recline, but there's room under the front seats for feet, and the floor is nearly flat, which increases the amount of perceived space. Sit behind the front seat adjusted for your driving position, and chances are you'll think the RDX is spacious, more so than some luxury crossovers in this price range. I wish the backs of the front seats weren't hard, but the back-seat package is still mostly a strength.

Walk to the cargo area, and the positive picture continues. Leave the rear seats in place, and you've got 31.1 cubic feet of cargo space. It's sizable even before you pull one of two cargo-area levers to fold down the left or right side of the rear seats. The real magic begins once you lift up the cargo floor, revealing a long, hidden storage compartment 6 inches deep. Lift up the cover more, and you'll see another smaller storage area (and a shallow third one). Innovative storage solutions don't scream, "I've made it," but luxury car buyers often pay a hidden tax, in the form of interior space, by eschewing mainstream cars. The RDX helps minimize that spatial sacrifice.

Where we see room for improvement is with the RDX's awful rear visibility. There's no easy fix here—and properly adjusted side mirrors help—but we'd welcome any improvement that doesn't result in the next RDX resembling the Subaru Forester or Honda Passport, two sensible and spacious models with boxy designs. In the RDX, even fold-down rear-seat headrests (for when they're not in use, as in some XC60s) or slimmer hinges for the power liftgate would be appreciated.

If you don't mind the bold 2019 RDX's subpar outward visibility, know that the interior functionality absolutely lives up to the "utility" part of sport utility vehicle.

It's soupless now, but when Zach is bringing home the liquid gold, this is where he stashes it.

2018 Honda Civic Type R

"Driven prudently, the Civic Type R can achieve over 30 mpg and travel in excess of 300 miles on a tank of gas."
Chris Walton

Avg CO2 0.83 lb/mi **Energy cons** 140 kW-hr/100 mi **Unresolved problems** None **Maintenance cost** $96.51 (1-oil change, inspection) **Normal-wear cost** $1,380 (four new tires) **Base price** $35,595 **As-tested** $35,595 **EPA City/Hwy/Comb Fuel Econ** 22/28/25 mpg
Real MPG 23.7/33.5/27.3 mpg

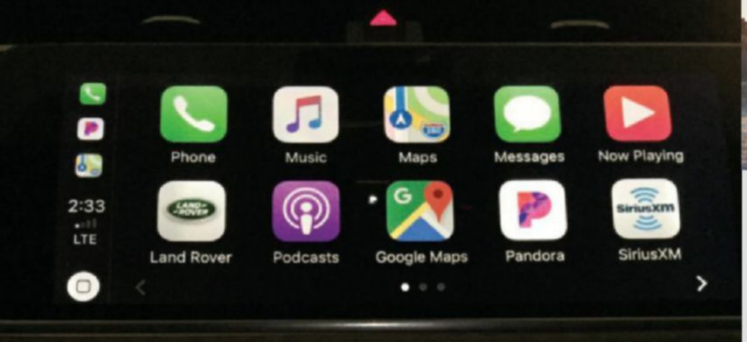
Service life: 9 mo/ 13,939 mi
Avg Fuel Econ: 23.5 mpg

About a month ago, I proudly shared with associate road test editor Erick Ayapana a photo of the Civic Type R's self-reported fuel economy, showing 33.3 mpg. Spying the car's odometer below that impressive figure, Erick responded, "You have about three months to add 8,000 miles [laughing/crying emoji]." To which I replied "[big eyes emoji]."

Our goal is put 20,000 miles on a long-term car in a year, and because most of us don't drive our cars 55 miles each day, that requires several road trips, of which the CTR has had few. This also means the car's average fuel economy has been lingering around the EPA's city estimate of 22 mpg. In the two months since the a-ha moment, we've added nearly 2,000 miles and brought that average up to 23.5 mpg.

The first long drive I made was an overnighter to Honda Proving Center, north of California City. Thanks to cooperative traffic, I managed a 29.5-mpg tankful and tempted fate by putting more miles (296) between fills than anyone had previously. The next mile-piling opportunity came from McLaren, which was hosting an event in Arizona. The 750-mile trip netted 28.5-, 29.2-, and 25.3-mpg tanks. Finally, Erick feather-footed a trip to Santa Barbara, the highway to which is highly patrolled, and netted a 32.1-mpg average.

The driver's seat is perfectly suited for long drives. The navigation system displaying the posted speed limit is handy, especially when the permitted speeds change from 65 to 70 to 75 mph. With a few months to put 6,000 miles on the car, more long drives are needed.



2018 Land Rover Range Rover Velar

Service life:
11 mo/22,456 mi • Avg Fuel Econ: 19.5 mpg

"For 2018 Velar owners, I highly recommend getting the CarPlay retrofit. Works great!" **Mark Rechtin**

Avg CO2 0.99 lb/mi **Energy cons** 169 kW-hr/100 mi
Unresolved problems None **Maintenance cost** $282.79 (1-oil change, inspection) **Normal-wear cost** $0
Base price $70,595 **As-tested** $76,041 **EPA City/Hwy/Comb Fuel Econ** 18/24/20 mpg **Real MPG** 23.3 mpg combined

There's a little-known codicil in the lore of home renovation: Don't tear up anything unless you want to create new problems.

Perhaps that's why I shouldn't have been so heart-set in my desire to have Apple CarPlay retrofit into the Velar's infotainment system. But the native Land Rover InControl apps are so bad that I had abandoned them.

One $184.99 software reflash at the dealership later, and CarPlay worked great, seamlessly alternating between satellite radio and phone calls and text messages despite different operating systems.

Despite the hassles, adding CarPlay to the Velar was the right call. Do it!

Unfortunately, the reflash triggered a software cascade elsewhere in the display, making it impossible to manually raise or lower the vehicle via the touchscreen controls.

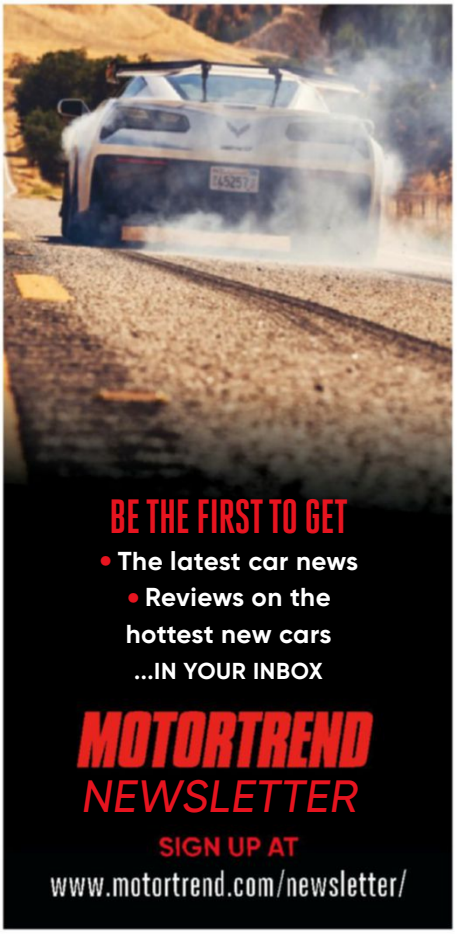
The unresponsive icons were only for ride height. Climate control, radio, and other vehicle controls all worked fine. Out of options, I even jokingly asked Siri to raise the vehicle, to no effect (obviously). The software crash also had the unnerving effect of the Velar automatically lowering itself (and staying there) when placed into park, which resulted in several teeth-clenching scrapes when letting out passenger-side occupants in high-curbed L.A.

Fortunately, I was not alone in my circumstance. Land Rover North America had already determined another software patch was in order. A quick drop at the dealership for another reflash, and everything was back in order. (A quick note about the dealership: Whoever did the second reflash had not cleaned their hands/clothes/tools before setting about their work; our Velar returned with its center armrest splashed with stains. Some leather cleaner took care of it, but still.)

But enough about telephony. Aside from that glitch, the Velar has continued to be a sleek, appealing ride. It also appears to have become the official vehicle of coastal Los Angeles, given its consistent appearance in transporting my fellow commuters.

Copy editor Claire Crowley borrowed the Velar for a weekend. Her impressions? "The Velar is sex on wheels, but the cupholders suck. I guess they hold your cup good and tight when you're rock crawling, but they're way too snug for everyday coffee drinking. I had to pry my Peet's from its G.I. Joe kung-fu grip every time I wanted a sip."

If you own a Velar, those are First World Problems.



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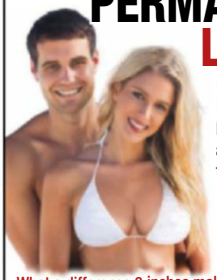

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The Big Picture

Angus MacKenzie

My Corvette Moment

Celebrating 70 years of history together

It's fitting the C8 Corvette graces the cover of this, the 70th anniversary issue of *MotorTrend* magazine. We've grown up together, you see.

"We wanted a magazine that would interest the foreign car exponent, the sports car enthusiast, the custom car fan, and also be equally interesting to the stock car owner," original *MotorTrend* editor-in-chief Walt Woron wrote as he put the finishing touches on the September 1949 issue. "A magazine that brings you the trends of the automotive field: designs of the future, what's new in motoring, news from the Continent, trends in design."

MotorTrend founder Robert Petersen's personal connection with Southern California race car builder Frank Kurtis perhaps explains why he chose the Kurtis Sport Car as the first cover car for his new magazine—rather than, say, a Chevrolet sedan, America's top-selling car that year. But the choice was also an eerily prescient confirmation of *MotorTrend*'s mission statement.

Within two years of the Kurtis appearing on our cover, a senior GM executive in Detroit had instigated a secret backroom program code-named Project Opel, a proposal for a fiberglass-bodied sports car that, like the Kurtis, used many regular production car components under its shapely skin. The GM exec's name? Harley Earl. And the car? Well, it first came to the public's attention as the EX-122, one of the stars of GM's 1953 Motorama Show at New York's Waldorf Astoria hotel. But you know it better as the original Chevrolet Corvette.

Frank Kurtis had the idea. GM had the money.

Today *MotorTrend* is more than just a magazine. It's a video on demand service, linear TV channels, a website, and a social media phenomenon—an automotive content creator and curator with an audience that now spans the globe. *MotorTrend* has grown up. So, too, has the Chevrolet Corvette. The C8 is still America's Own Sports Car, but with its state-of-the-supercar-art chassis and mid-engine layout, it's built to take on all comers, from Italy's Ferrari to Britain's McLaren and Germany's Porsche.

I can't wait to drive it.

Although I'd had brief stints in C3s, C4s, and C5s over the years, I arrived in the U.S. to become editor-in-chief of *MotorTrend* just after the C6 launched in 2004. Since then, I've done a lot of miles in Corvettes. Like all great sports cars, the very best Corvettes bring even the most mundane drives to life. And the special drives ... well, they're something else again.

July 2011. The afternoon traffic on the A9 autobahn in southern Germany is unusually light. Le Mans champ and *MotorTrend* presenter Justin Bell is lounging in the passenger seat as I let the Corvette ZR1 off the leash. For 25 glorious minutes we own the fast lane, the speedo needle never falling below 120 mph and occasionally flickering past 180 mph when I can read the traffic in the far distance.

We cover 55 miles in those 25 minutes, an average speed of 132 mph, the 638-hp V-8 leaving a thundering sonic boom in its wake, scattering slower Benzes and BMWs and Audis like autumn leaves. We roll into the Munich evening traffic grinning from ear to ear at the sheer audacity of it all, at the idea that even in this era of speed cameras, fuel-sipping hybrids, and computer-controlled cars that do most of the driving themselves, you can still drive a supercar at supercar speeds on a public road.

With Justin counting off the increments, I took the mighty ZR1 all the way to 200 mph.

It got even better the next day, filming an episode of "Epic Drives" for the MotorTrend Channel on YouTube.

I punched the gas as the traffic cleared, shifting into fifth at 160 mph and sixth at somewhere north of 180 mph. And then, with Justin watching the speedo and counting off the increments, almost shouting to be heard over the shrieking wall-of-sound snarl from the supercharged small-block, I took the mighty ZR1 all the way to 200 mph.

That is my all-time best Corvette Moment, for now. I suspect the stunning C8 is going to provide some better ones in the coming years. And just as we have for the past 70 years, *MotorTrend* will take you along for the ride. ■

These screen images may be a little fuzzy, but the memories are not.


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